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Original Article

Early Complications of Suture Closure of Perforated Duodenal Ulcer : A Study of 100 Cases

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Abstract

Perforated Duodenal Ulcer is one of the commonest surgical emergencies, most prevalent in middle aged male persons. Most perforations of doudenum are spontaneous but there is an increasing incidence of perforation following the use of NSAIDs. Repair of duodenal ulcer perforation is an urgent and contaminated operation. So, patients may develop post operative complications, like wound sepsis, pneumonia, paralytic ileus, septicemia, shock, electrolyte imbalance, repair failure, duodenal fistula, intra abdominal abscess, burst abdomen etc. Here 100 cases of Perforated Duodenal Ulcer was admitted in surgical wards of R.M.C.H from 01.01.2004-31.12.2005 and all of them underwent laparotomy suture closure of perforation and peritoneal toilet. Meticulous postoperative follow up was done for an average period of 7-10 days to see the complications. 21 post operative complications were found among 100 patients. Most complications occurred in elderly patients with delayed admission, I e, 48 hours after symptoms. The commonest complications were pulmonary (4%), pelvic collection (4%), wound infection (3%), septicemia (2%), burst abdomen (2%), paralytic ileus (2%). 2 out of the 100 cases died from post-operative septicemia. Better prognosis can be expected in young patients who come early with a stable haemodynamic state.

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Introduction

Perforated Duodenal Ulcer afflicts a major share of our population. Perforation is one of its acute complications that needs urgent surgical management and it is associated with high rate of mortality and morbidity.

Traditionally perforation refers to sudden rupture of peptic ulcer and ensuing acute inflammatory peritoneal reaction. It is the commonest complication and commonest cause of death and occurs in 10-15% of recognized chronic. peptic ulcer patients. If not properly treated, death from peritonitis, septicemia, gross electrolyte imbalance may occur in perforation.

Suture closure of perforated duodenal ulcer is an emergency and contaminated surgery. So, patients may frequently develop post-operative complications like wound sepsis, pneumonia, paralytic ileus, septicemia, shock renal failure, electrolyte imbalance, doudenal fistula, intrabdominal abscess, burst abdomen etc.

This study was undertaken to provide a wide range of data of patients with duodenal ulcer perforation regarding age, sex distribution, time lapse between

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onset of symptoms and hospitalization, and the early post-operative complications following suture closure of duodenal ulcer perforation and to suggest precautions against complications.

Meterials & Methods

This study was based on the patients admitted in R.M.C.H (Surgical ward) from 01.01.2004–31.12.2005. Of them 100 patients were diagnosed as Chronic duodenal ulcer perforation and underwent suture closure of perforation and thorough peritoneal toilet. Diagnostic criteria included a detailed history, meticulous clinical examination and plain X-ray abdomen (A/P- view) in erect posture. All patients had pneum-operitoneum in plain X-rays. Other investigations like blood for TC, DC. Hb%, serum creatinine, serum electrolytes, blood sugar, blood urea and blood grouping were done in some cases.

After adequate resuscitation, laparotomy was done through midline incision and identified the perforation site and it was closed transversely with interrupted suture of 1/0 or 2/0 atraumatic catgut. In all cases thorough peritoneal toilet was done and keeping a drain tube in-situ laparotomy wound was closed layer by layer.

Meticulous postoperative care and follow up were done in all the cases. The patients remained in recovery room for at least 16 hours and then shifted to general ward. In majority of cases postoperative period was uneventful and oral fluid started on 3rd P.O.D. and stitches were removed on 7th – 8th P.O.D. In some cases recovery was complicated and managed accordingly.

Results

Out of 100 cases, 34% patients were between 30-40 yrs of age group. Age range was from 18 yrs to 70yrs, mean age was 41 years.

All the patients in the series were male. It does not mean that females are immune to this condition. 60% patients (n-66) in this series gave history of duodenal ulcer symptoms of various duration and none of these were confirmed by upper G.I. endoscopy previously. 13% gave history of intake of NSAID and 27% gave no history D.U. symptoms or intake of such drugs.

Table 1: Age distribution of patients

Age group (Years)	Number of patients	Percentage
10-20	2	2%
21.30	17	17%
31-40	34	34%
41-50	20	20%
51-60	17	17%
61-70	7	7%
>70	3	3%

Table-2: Associate conditions

DU symptoms	60	60%
No history of DU/NSAID	27	27%
Int of NSAID	13	13%

The time lapse in hospitalization varied from 4 hours to 6 days. 13 patients came to the hospital within 6 hours of onset of symptoms. Majority 19% came between 18-24 hours. Two patients came after 6 days.

Table-3: Time lapse between onset of symptoms and Hospitalization

Duration (hours)	No of patients	Percentage
6	13	13%
6-12	15	15%
12-18	178	178%
18-24	19	19%
24-30	11	11%
36-48	5	5%
48-72	11	11%
72	9	9%

Presenting features: All the patients complained of severe abdominal pain starting in the epigastrium. Most of the patients (67%) noticed abdominal distention. 19% of the patients presented with features of shock.

Table-4: Major symptoms at admission

Symptoms	No. of patients	Percentage
Severe abdominal pain	100	100
Abdominal distention	67	67
Features of shock	19	19

Table-5: Major sign at admission

Sign	No. of patients	Percentage
Tachycardia	100	100
Dehydration	68	68
Abdominal distention	67	67
Abdominal tenderness	100	100
Abdominal rigidity	100	100
Obliteration of liver dullness	76	76
Absence of bowel sound	86	86
Anemia	36	36
Raised temperature	18	18

Radiological findings: All patients in this series had pneumoperitoneum and most (82%) had ground glass appearance of the abdomen.

Laparotomy findings: Most of the cases were opened through midline incision and after opening of the peritoneum, there was expulsion of gas in all cases. Most perforations (38%) were found adhered with omentum and nature of peritoneal fluid was sero-sanguinous 49%, bilious 29% and purulent 22%.

Table-6: Laparotomy findings (size of perforations)

Size of perforation (mm)	Percentage	Site
< 5	64%	Anterior wall of first part of duodenum
5-10	27%	Anterior wall of first part of duodenum
> 10	9%	Anterior wall of first part of duodenum

Types of operation: In all cases, perforation was closed transversely with interrupted sutures (1/0, 2/0 Atraumatic chromic catgut) reinforced with an omental patch. thorough peritoneal toilet with normal saline was done and keeping a drain in sub hepatic space abdomen was closed layer by layer. Patients were followed up for an average of 7 to 10 days.

Post-operative complications: 18 patients in this series developed complications. The commonest complications were intraabdominal infections, segmental collapse of lungs etc. (19%, n=4) and paralytic ileus (14.3%, n-3). One patient developed two complications and another patient who came 6 days after the onset of symptoms developed three complications like renal failure, paralytic ileus and burst abdomen.

Table-7: Post-operative complications

Complications	No. of complications	Percentage
Pelvic collection	4	19%
Respiratory complication	4	19%
Wound infection	3	14.3%
Paralytic ileus	3	14.3%
Septicemia	2	9.5%
Burst abdomen	2	9.5%
UTI	1	4.8%
Renal failure	1	4.8%
Duodenal fistula	1	4.8%
Total	21	100%

Most complications (29%, n=6) developed on 4th P.O.D. and, these were chest complications, pelvic collection and wound infection.

Mortality: Tow patients out of 100 were expired on 1st POD in this series. These were due to septicaemic shock with multiple organ failure. Preoperative conditions of these patients were not satisfactory.

The complicated patients had prolonged hospital stay as much as 27 days.

The complicated patients:

1. **Age distribution:** Most of the patients were in elderly age group. Average age of the complicated patients were 47.2 years and 61.1% patients were above 50 years of age.
2. **Time lapsed before admission in complicated patients:** An average 54.7 hours were lapsed before admission. The maximum was 6 days and minimum was 12 hours. 96 hours were lapsed in patients who developed burst abdomen and paralytic ileus. Renal failure develolped in a patient who lapsed 6 days before admission.

3. **Per-operative findings:** 44.4% of complicated patient had gross peritoneal soiling. The peritoneal contents were purulent in 66.7% and bilious in 33.3%. Patients with purulent contents developed mainly paralytic ileus, wound infection and burst abdomen.

4. **Hospital stay of complicated patients:** Average stay of complicated patients was 12 days, minimum was 7 days and maximum was 27 days.

Hospital stay of complicated patients was ranging from 7 days to 27 days, means mean stay was 12 days. Most prolonged stay period was found in burst abdomen (27 days) and patient with pelvic collection and pulmonary complication had hospital stay for 12 days and 10 days respectively.

Discussion

Due to modern diagnostic and effective treatment facilities of peptic ulcer, the incidence of patients of chr. duodenal ulcer with pyloric stensis has reduced markedly. In contrast, incidence of perforated duodenal ulcer has not reduced at all to that extent and it is still common in surgical practice.

Here 100 cases of duodenal ulcer perforation have been studied regarding their age, sex distribution, clinical manifestations and early postoperative complications following suture closure of duodenal ulcer perforation and the findings are compared with other contemporary works on the topic.

The age distribution of patients in this series is almost similar to that of other observations. Like the results of Barman (1990)[2], and paul. H. Jordan (1995)[3], the peak incidence of duodenal perforation was in the 4th decade, 31-40 years. Average age in this study was 41 years which was 7 years more than that of Rayhana Awwal (1996)[4]. It may be due to recent trend of increased incidence of duodenal perforation in elderly age group following increasing use of NSAIDs[5].

There was no female patient in this series. The same sex distribution was found by Rayhana Awwal[4]. Other authors also found a male predominance. Jordan showed male-female ratio 26:1 and Barman reported 78% male patients in this series. The incidence of female patients is increasing in developed country. The very low incidence of female patients in our country may be due to great difference in habits, social, economical and cultural activities. However, this result in the present series is contradictory to the statement now perforations most commonly occur in elderly female patient[5].

In this study 60% patients gave previous history of peptic ulcer symptoms and 13% patients had history of intake of NSAIDs. Paul. H Jordan reported 67% patients had previous history of peptic ulcer disease and Svanes C found 20% of patients with perforation have used NSAIDs.

The time lapse between onset of symptoms and hospitalization has a great influence on post operative complication. It ranges from 4 hours to 6 days and 20% patients came to hospital after 48 hours.

The complicated patients lapsed 54.7 hours before admission whereas the uncomplicated patients lapsed only 17.4 hours. This suggests that the prolonged preadmission period makes the patient susceptible to complications. This is supported by Deus Fombellida J[7]. Time lapsed due to resuscitation of patient before operation is desirable because mortality can be reduced if 2-3 hours are spent in active resuscitation.

All patients in this series presented with abdominal pain through the severity ad location varied from patient to patient. 19% of patients presented with shock at admission that was less than that of Rayhana Awwal (30%) and 67% patient in our series had abdominal distention though Rayhana Awwal found abdominal distention in all patients. this reduced incidence may be due to early introduction of nasogastric tube outside hospital.

All patients had free gas shadow in X-ray abdomen in erect posture though it is generally accepted that only 70% of duodenal perforation have X-ray features of pneumoperitoneum. This was due to increased tendency to treat conservatively by patients without pneumoperitoneum and thereby excluded from this study.

Laparotomy findings are more or less similar to that of other study. These correlated well with other study in our country. We found 64% perforations were less than 5 mm in size and 9% were more than 10 mm in size and 23% cases had gross peritoneal soiling. Patient lapsed a longer

time before operation in this study which causes the peritoneal fluid to become purulent in 22% cases.

On average, if recovered uneventfully after operation oral feeding started on 3rd POD and skin stitches were removed on the 7th POD and most patients were discharged on the same day.

Post-operative complications: Overall complications rate in this series was 21%. This was about half of the complication rate found in Rayhana Awwal series (40%) in 1996 in our country and also less than that of Bonati L series[8] (30%) in other country. This marked reduction in complications can be explained by better antibiotic coverage, meticulous preoperative care, proper resuscitation of the patients before operation, improved anesthesia and somewhat better hospital environment, though some risk factors for complications persist like late presentation, elderly patient etc.

Most postoperative complications (about 29%) occurred on 4th POD. The average age of the complicated patient was 47.2 years. 61.1% patient were above 50 years of age. The complicated patients also lapsed more time (average 57.7 hours) before admission. Average hospital stay of complicated patients was 12 days. This result was less than that of other study. (Mesbah[9] reported 17.8 days average hospital stay). This short hospital stay was due to lower incidence of complications and a tendency to discharge the patient early from the crowdy wards.

Conclusion

Perforated duodenal ulcer is one of the commonest surgical emergencies most prevalent in male persons of middle age group. Most perforations of duodenum are spontaneous but there is an increasing incidence of perforation following use of NSAIDs. So, its use should be limited and if really necessary a proton pump inhibitor should be combined specially in elderly people who are more prone to develop post-operative complications. Most important factor predisposing to complication is delay in admission, so, when a diagnosis of perforation is suspected the case should be promptly referred to place where related surgical facilities are available. There is the responsibility of general practitioner and thana health complex. This study showed that mortality and morbidity of perforated duodenal ulcer can be reduced by interplay of a large number of factors which includes early admission to hospital, early diagnosis and prompt resuscitation, improvement in anesthesia, treatment of associated disease condition, early surgical intervention, good surgical technique and minimal operative trauma. Finally, postoperative prophylaxis of complications and prompt recognition and treatment play a vital role in reduction of mortality and morbidity.

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