

Presentation and Management of Perforated Duodenal Ulcer

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Background: Perforated duodenal ulcer is one of the most common causes of abdominal peritonitis. Management of duodenal ulcer had changed after the discovery of H. Pylori and the use of proton pump inhibitors.

Objective: To evaluate the pattern of presentation and mode of management of duodenal ulcer perforations.

Design: A Retrospective Study.

Setting: Surgical Department, Salmaniya Medical Complex, Bahrain.

Methods: All patients with duodenal ulcer perforations seen between 2010 and 2014 were included in the study. The following were documented: personal characteristics, duration of disease, probable risk factors, type of surgery and complications. Data obtained was analyzed using SPSS.

Result: Forty-one patients with perforated peptic ulcer were diagnosed between 2010 and 2014. The mean age was 41 years ranging from 18 to 79 years. Simple closure with omental patch was used.

Conclusion: Middle-aged males were the predominant patients in our perforated peptic ulcer cohort. The majority of the patients do not have known risk factors. Thirty-six (87.8%) patients had peritonitis on examination, and the diagnosis could be confirmed in 30 (73.2%) by finding air under the diaphragm in an erect chest X-ray. Forty (97.5%) perforated duodenal ulcer were repaired by open surgery.

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Elective peptic ulcer surgery was common before the discovery that peptic ulcer is caused by H. pylori and non-steroidal anti-inflammatory medications (NSAIDs)¹. The discovery changed the management of the disease, but still, its complication could be seen as an emergency in the form of perforation or bleeding². A perforated ulcer can present early with chemical peritonitis or late with septic peritonitis. In late stage, it could cause severe sepsis which might lead to organ failure and mortality. Emergency surgical treatment is recommended for this condition³.

The trend of peptic ulcer disease has changed over the last three decades, possibly because of the introduction of triple therapy management for these patients; nevertheless, the patients could still present with a perforated ulcer⁴.

The aim of this study is to evaluate the pattern of presentation and mode of management of duodenal ulcer perforations.

METHOD

All patients operated with peptic ulcer perforation between January 2010 to December 2014 were included in the study.

The patient names were retrieved from the operative theater registry, then the files were recovered. The following data were documented: sex, age, occupation, history of use of NSAIDs, duration of dyspeptic symptom, the chief complaint, the operative findings and the method of closure of the perforation and postoperative complications. The data retrieved was analyzed using SPSS 22.

RESULT

Forty-one patients with perforated peptic ulcer were diagnosed between 2010 and 2014. Mean age was 41 years ranging from 18 to 79 years. Three (7.3%) were females and 38 (92.7%) were males. Twelve (29.3%) were Bahrainis and 29 (70.7%) were non-Bahrainis. The number of cases ranged from 7 to 15 per year (2010 - 2014). Thirteen (31.7%) patients were known to have history of peptic ulcer disease.

Six (14.6%) patients had history of NSAIDs intake and 8 (19.5%) were smokers. Comorbidities encountered were as follows: 4 (9.8%) were hypertensive, 2 (4.9%) were diabetic, one (2.4%) was known to have ischemic heart disease. The onset of pain ranges from 1 hour to 240 hours. Forty (98%)

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patients presented with abdominal pain, 20 (48.8%) had upper abdominal pain and 20 (48.8%) generalized pain, no data was retrieved regarding pain for one patient.

Twenty-seven (66%) complained from nausea, 19 (46.3%) from vomiting, and 11 (26.8%) from loss of appetite and 6 (14.6%) from dyspepsia. Twenty-nine (70.7%) patients had epigastric tenderness, 36 (87.8%) had a sign of peritonitis, see table 1.

Table 1: Basic Measurement (Fasting Time, Temperature, Pulse, BP)

	Minimum	Maximum	Mean
Fasting time (Hours)	16	48	32.00
Temperature (C)	35.60	37.90	36.6293
Pulse (beat/min)	55	115	82.48
Bp systolic (mmHg)	72	178	122.40
Bp diastolic (mmHg)	46	111	75.58

Most of the patients had high PMN and WBC counts, see table 2. Thirty (73.2%) had evidence of air under diaphragm on plain erect chest X-ray. Thirty-five (85.3%) were ASA1 (American Society of anesthesia grade 1: No organic pathology or patients in whom the pathological process is localized and does not cause any systemic disturbance or abnormality)⁵.

Table 2: Basic Laboratory Investigation

	Minimum	Maximum	Mean
WBC count	5.80	31.90	12.7342
PMN	7.60	94.00	75.1568
Bands	00.	8.00	3784.
HB	4.60	18.10	14.5737
Platelets	141.00	767.00	253.7429

Forty (97.5%) patients had an open surgery. The approach was slightly varied from graham patch 23 (56.1%). Before sutures are tied, the adjacent omentum is brought up to the perforation with the sutures untied and laid out on the anterior surface of the duodenum and successively tied from the superior to inferior side, so as to tampon the perforation with the vascularized omental pedicle graft. The patch must be a living omental patch, and the omentum should not be strangulated⁶. The mean size of the perforations was 5.13 mm ranging from 1mm to 12mm. Postoperatively, 3 (7.3%) developed wound dehiscence, 2 (4.9%) developed an intra-abdominal abscess, 12 (29.3%) had pulmonary complications and 12 (29.3%) had surgical site infections.

DISCUSSION

A perforated peptic ulcer is an emergency⁷. Bleeding and perforation are the most common indications for emergency surgery⁸. Many studies found a steady incidence of perforated peptic ulcers and similar to our study, the rate was stable for the number of cases between 7-15 per year⁹. In our study, the mean age was 41 years which is similar to Bin-Taleb et al, which has a mean age of 39 years¹⁰. Male preponderance is similar to

the international numbers¹¹. In our study, 31% of the patients had a history of peptic ulcer disease compared to other studies where 10-32% of the patients had no history of peptic ulcer disease¹². Smoking (20%) and NSAID (14.3%) were recorded in this study which is similar to other studies from different regions^{13,14}.

Severe, sudden-onset epigastric pain or generalized pain might indicate perforated peptic ulcer. The peritonitis resulting from acid exposure can present as abdominal board-like rigidity. Only two-thirds of patients present with frank peritonitis, which might partly explain the diagnostic delay in some patients, while 87% of our patients presented with peritonitis¹⁵. Laboratory markers are not diagnostic for perforated ulcers. However, they do help to estimate the inflammatory response and assess organ function.

Duodenal perforation is the most common cause of pneumoperitoneum¹⁶. An upright abdominal radiograph is easy or an erect chest radiograph could be diagnostic. However, its sensitivity is only 75% and it might not show the exact cause of pneumoperitoneum. In our study, 71% of the patients had air under diaphragm in an erect chest X-ray. The use of omental pedicle and closure with interrupted sutures was the main procedure for several decades¹⁷. The procedure in our study was varying from graham patch (56.1%) to modified graham patch (43.9%). The postoperative complication rates varied between 7.5% and 30% in different studies¹⁸. In our study, 7.3% developed wound dehiscence, 4.9% developed an intra-abdominal abscess, 29.3% had pulmonary infection and 29.3% had surgical site infections, which is similar to other studies¹.

It was challenging to retrieve the full data because of the retrospective nature of the study. The short mean follow-up period would not allow categorical statement on the outcome. A randomized prospective study would be advised to address this issue in the future.

CONCLUSION

Middle-aged males were the predominant patients in our perforated peptic ulcer cohort. The majority of the patients do not have known risk factors. Thirty-six (87.8%) patients had peritonitis on examination, and the diagnosis could be confirmed in 30 (73.2%) by finding air under the diaphragm in an erect chest X-ray. Forty (97.5%) perforated duodenal ulcer were repaired by open surgery.

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