

# Case Series

## Cost effective management of duodenal ulcers in Uganda: interventions based on a series of seven cases

Gabriel R. Nzarubara

Makerere University, Faculty of Medicine, Department of Anatomy, P. O. Box 7072, Kampala, Uganda

### ABSTRACT

#### Background

Our understanding of the cause and treatment of peptic ulcer disease has changed dramatically over the last couple of decades. It was quite common some years ago to treat chronic ulcers surgically. These days, the operative treatment is restricted to the small proportion of ulcer patients who have complications such as perforation. The author reports seven cases of perforated duodenal ulcers seen in a surgical clinic between 1995 and 2001. Recommendations on the criteria for selecting the appropriate surgical intervention for patients with perforated duodenal ulcer are given.

**Objective:** To decide on the appropriate surgical interventions for patients with perforated duodenal ulcer.

**Design:** These are case series of 7 patients who presented with perforated duodenal ulcers without a history of peptic ulcer disease.

**Materials and methods:** Seven patients presented with perforated duodenal ulcer 72 hours after perforation in a specialist surgical clinic in Kampala were analyzed. Appropriate management based on these patients is suggested.

**Results:** These patients were initially treated in upcountry clinics for acute gastritis from either alcohol consumption or suspected food poisoning. There was no duodenal ulcer history. As a result, they came to specialist surgical clinic more than 72 hours after perforation. Diagnosis of perforated duodenal ulcer was made and they were operated using the appropriate surgical intervention.

**Conclusion:** Diagnosis of hangovers and acute gastritis from alcoholic consumption or suspected food poisoning should be treated with suspicion because the symptoms and signs may mimic perforated peptic ulcer in "silent" chronic ulcers. The final decision on the appropriate surgical intervention for patients with perforated duodenal ulcer stratifies them into two groups: The previously fit patients who have relatively mild physiological compromise imposed on previously healthy organ system by the perforation can withstand the operative stress of definitive procedure.

The Second category includes patients who are critically ill, who poorly tolerate any operation and hence poor surgical risks. These require urgent, adequate resuscitation and simple suture with omental patch.

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### INTRODUCTION:

Studies from developed countries have shown that 70 to 80% of perforations have history of peptic ulcer disease and that the perforation are common in old age groups above the age of 50 years<sup>1,2,3</sup>. In this series, these seven patients had no ulcer history. The age ranged between 30 and 45 years.

Our understanding of the cause and treatment of peptic ulcer disease has changed dramatically over the last couple of decades. *Helicobacter pylori*, an infectious organism has a very prominent

role in the pathogenesis<sup>4</sup>. It was quite common some years ago to treat chronic ulcers surgically. These days, the operative treatment is restricted to the small proportion of ulcer patients who have complications involving bleeding, perforation and obstruction.

The predisposing factors to perforation in these series could have been acute gastric distention from heavy alcohol consumption and ingestion of too much fried food in probably "silent" chronic duodenal ulcer. Perforation being a major complication of duodenal ulcer with high morbidity and mortality is associated with some risk factors<sup>5,6,7</sup>.

All patients who present with sudden onset of severe epigastric pain with a recent heavy consumption of alcohol and fried foods at parties should be investigated for perforated "silent" duodenal ulcer.

Diagnosis of acute gastritis is dangerous because it distracts attention to perforation where such delay may

#### Correspondence to:

Gabriel R. Nzarubara

Department of Anatomy,

Faculty of Medicine, Makerere University,

P.O. Box: 7072 KAMPALA, Uganda.

e-mail: [gnzarubara@yahoo.co.uk](mailto:gnzarubara@yahoo.co.uk)

Telephone: 041 540946 or 077429441

in turn lead to peritonitis. Since there are options in the emergency surgical management of perforated duodenal ulcer, the risk factors should be identified in order to decide on the appropriate surgical intervention.

The author reports seven cases of perforated duodenal ulcers seen in a surgical clinic between 1995 and 2001 and recommends the surgical options for managing perforated duodenal ulcers.

### **Objectives**

To present criteria to decide on the appropriate surgical intervention for patients with perforated duodenal ulcer.

### **Design**

This is a retrospective study of patients who presented with perforated duodenal ulcers without a history of peptic ulcer disease.

### **Materials and Methods:**

Between 1995 and 2001, the author operated seven patients who presented with perforated duodenal ulcer 72 hours after perforation. They were initially diagnosed as gastritis in upcountry health units. The highlights of the cases and the appropriate surgical option are presented:

#### **Case 1:**

A 32-year-old policeman was referred from an upcountry clinic because of severe abdominal pain due to suspected poisoned food. The referral note described the patient as a teetotaler, conscientious worker who is attached to the CID section of Uganda police. He spends the whole day investigating all sorts of crimes in his area. He rarely, if ever, takes meals during the day except on that unfortunate day when he took a local dish from a local restaurant for his lunch. He had never fallen sick before.

Later in the evening when he returned home from work, he developed severe abdominal pain. The pain was localized in the upper abdomen and radiating to the back. He didn't vomit but rather had severe nausea. Because the family believed that he had been poisoned because of the nature of his work, they tried all sorts of emetics from a traditional healer. Because the patient seemed to improve, the family decided to continue with the treatment but he was unable to go to work.

After three days, the pain came back and this time more severe and involving the whole abdomen. He developed a temperature and the abdomen became distended. He started vomiting. It is at this stage that the family decided to take him to a clinic upcountry where the attending doctor referred him to my surgical clinic.

On examination, he was in hypovolaemic shock, dyspnoeic, frightened, dehydrated, febrile and anaemic. He had moderately distended abdomen and generalized abdominal pain. The abdomen was silent and rebound tenderness was remarkable. There was no back pain. Peritonitis secondary to acute pancreatitis was suspected.

He was admitted for resuscitation and exploration. At operation, generalized peritonitis with purulent effusion secondary to perforated duodenal ulcer was found. Pancreas was normal. Peritoneal toilet was done and the perforation closed with an added omental patch. He was discharged after eight days. He is back on duty at his station.

#### **Case 2:**

A 36-year-old businessman was traveling from upcountry to Kampala for his business transactions. He was known to be alcoholic and indeed he had taken a lot of it the night before traveling. While traveling from home to Kampala, he developed severe abdominal pain. His colleagues took him to the nearest hospital where he was treated. The working diagnosis was acute gastritis from heavy alcohol consumption. When he seemed to improve, he was allowed to continue with his journey. He decided to rest at home taking the drugs from that hospital. After two days on conservative management, he came to the surgical clinic because there was no improvement.

From the history, it was discovered that he was a known alcoholic who had consumed a lot of it the night before travel. He was known to develop severe hang-over after heavy bout of drinking. He used to take panadol and plenty of vegetables for his lunch to be able to continue drinking in the evening. There was no peptic ulcer history.

On examination, he looked sick, exhausted, afebrile but in good nutritional status. The lower abdomen was soft but there was rigidity in the epigastrium. Percussion note showed fluid in the peritoneum. At auscultation, the abdomen was silent and plain abdominal x-ray showed gas under the diaphragm. Haemogram and serum electrolytes were normal. A diagnosis of duodenal ulcer was made.

He was admitted for operation. At operation, a perforated duodenal ulcer, which had been sealed off by omentum was found. Truncal vagotomy and drainage were done. Post-operative period was uneventful. He is

back on his business.

### **Case 3:**

A 38-year-old man was seen in the surgical clinic because of severe abdominal pain for three days. He was able to recall the time when the pain started. He associated the pain with "adulterated" alcoholic drink taken the previous night. Pain had persisted despite all kinds of medications from friends and family. There was no ulcer history.

On examination, he was in moderate hypovolaemic shock. He was afebrile with normal haemoglobination. Auscultation was normal but with guarding in the upper abdomen. There was rebound tenderness. A plain abdominal x-ray showed gas under the diaphragm.

He was admitted for operation. At operation, a perforated duodenal ulcer was found. There was no peritonitis. The omentum had sealed off the perforation. The perforation was closed and an omental patch added. He made uneventful recovery. He was discharged after five days.

### **Case 4:**

This was a 30-year-old casual worker. Apparently, he spent all his earnings on a potent local gin known as crude waragi. His friends knew him as Mr. D. D. O (Daily Drinking Officer). One night during the drinking spree, he was involved in a scuffle. The following morning, he failed to wake up to go to work and neighbors thought that it was the usual hangover made worse by the scuffles. He was taken to the nearest clinic where a diagnosis of gastritis was made and magnesium trisilicate and panadol were given. For three days, he was on this medication from that clinic. Friends were buying him all sorts of other medications and food to treat the gastritis.

When he deteriorated, he was referred to a surgical clinic where a diagnosis of peritonitis was made. There was no significant medical history and he denied peptic ulcer history. He was admitted for emergency operation. At operation, diffuse peritonitis from a perforated anterior duodenal ulcer was found. Peritoneal toilet and closure of the perforation with an added omental patch were done. He died on the third postoperative day from septicaemia.

### **Case 5**

A 38-year-old female nurse was referred to the surgical clinic from upcountry because of backache and abdominal pain, which had increased in fre-

quency and intensity within the previous 72 hours.

The significant points in the referral note were that within the last two years she had been on treatment for thoracolumbar pain of insidious onset. She had been put on Diclofenac sodium 50 mgs tds. She was on and off the drug because she was on self-medication.

In the clinic there was no history of peptic ulcer disease and therefore no such diagnosis had ever been made. On examination, she was in pain but in good nutritional status. The abdomen was rigid with rebound tenderness. Haemogram and serum electrolytes were normal. Barium meal investigation showed "features suggesting duodenal diverticulum and duodenal ulcer. Ulceration and perforation in the diverticulum are not excluded."

She was admitted for surgery and at operation there was indeed a perforated duodenal ulcer. Partial gastrectomy and gastrojejunostomy were done. Postoperative period was uneventful.

### **Case 6**

This is a 45-year-old shopkeeper who was taken to an upcountry clinic because of sudden onset of epigastric pain, which had started the previous night. He had vomited and the vomits contained blood. The severe attack started late at night after a Baptismal party for his daughter. Initial management in the clinic was for gastritis from heavy alcohol consumption. After about three days, he was referred to the surgical clinic. There was no history of peptic ulceration according to the referral note.

On examination, he was a sick man, febrile and in shock. There was guarding with mild rebound tenderness more marked on the right side of abdomen. After thorough examination and investigations, a diagnosis of perforated duodenal ulcer was made. He was admitted for operation.

At operation, a perforated duodenal ulcer with peritonitis was found. After peritoneal toilet, the perforation was closed and augmented with an omental patch. He was put on antibiotics and analgesics. On the fourth postoperative day, he developed a burst abdomen, which was repaired. Thereafter, he made a steady recovery.

### **Case 7:**

This was a 39-year-old Secretary known to be saved. This meant that she does not take alcohol and goes for prayer meetings more often than an average Christian. She was however known to enjoy partying. She was referred to the surgical clinic because of severe abdominal pain, and general weakness.

From the history, it was revealed that she was a single mother with three children. The father of the chil-

dren had abandoned her and yet her income was not adequate to cater for the family. She had no history of peptic ulceration. Attempts to get another man were futile and she resorted to prayers.

On examination, she was dehydrated, febrile and anaemic. Haemogram was normal. She had moderately distended abdomen and generalized abdominal pain. The abdomen was silent and rebound tenderness was remarkable. Auscultation was normal with generalized guarding. There was no rebound tenderness. A plain abdominal x-ray showed gas under the diaphragm.

Diagnosis of a perforated duodenal ulcer was made. She was admitted for operation. At operation, a perforated duodenal ulcer was found. It was closed and an omental patch added. The patient made uneventful recovery. She is back in her office on her job.

## DISCUSSION

Peptic ulcer disease is becoming more common in developing countries in general and Uganda in particular. There is a higher prevalence of *Helicobacter pylori* infection. Although the actual route of transmission is unknown, oral-oral or faecal-oral transmission is suspected. The contamination of drinking water may play a role<sup>8</sup>. Man is the only known reservoir. It is now believed that half of the world's population is colonized with *H. pylori*, and that infection with these bacteria probably happens in childhood. However, why ulcers eventually develop in only some of these people remains unknown.

It has been suggested that environmental factors may play a part. Some studies have shown that the risk factors for ulcer from *H. pylori* infection include lower socio-economic group in a crowded and unsanitary living environment black or Hispanic and aged 60 or older.<sup>4</sup> Changes in life style leading to cigarette smoking, anxiety, stress, excess coffee and alcohol drinking and family history of ulcer disease are other risks.

There is variation in management of peptic ulcer disease. Patients in rural areas are not getting same medical services as their counterparts in urban areas. Specialist clinics are in the city, while general practitioners manage rural medical units.

Recent natural disasters such as the AIDS pandemic in the region are also becoming significant aetiological factors in peptic ulcer diseases. There is a significant presence of HIV patients among our

patients coming for endoscopy.

In the general U.S. population the sero prevalence of IgG antibodies to *H. pylori* is 30-40%, with the rate of seroconversion estimated at 0.5% per year. What appears to be the increasing frequency of seropositivity in older adults in developed countries is mostly due to the cohort effect, with the prevalence of antibody in adults actually reflecting acquisition of disease earlier in life.

Better diagnostic tools particularly fiberoptic endoscopy has helped to make early diagnosis of dyspepsia. Many medical centers offer adequate treatment of non-ulcer dyspepsia; they have the tools and patients have the ability to afford the drugs.

Changes in smoking habits may be contributory. It is in the developed countries where "No Smoking" zones are enforced. There is decreased physical work with adequate exercises.

The significant factors in the pathogenesis of perforated duodenal ulcer in this series include<sup>7</sup>:

- Acute gastric distention immediately after heavy meals and heavy consumption of alcohol.
- Trauma to the "silent" chronic duodenal ulcer again from heavy fried foods.
- Psychological stimuli may accelerate perforation in susceptible patients due to stress and strain and worries.

### Criteria to decide on the appropriate surgical intervention.

The treatment of perforated duodenal ulcer is still a subject of controversy. The controversy is between conservative non-operative treatment, simple suture of the perforated lesion with the only objective of solving the acute problem or definitive surgery directed towards the elimination of the ulcerogenic mechanism during the first operation.

To decide on the appropriate surgical intervention, it is prudent to analyze the risk factors in a patient with perforated duodenal ulcer.

### Age of the patient:

Perforation remains a serious complication of peptic ulcer. There is an overall 12% morbidity and mortality in developed countries for patients of all age groups but can be as high as 25% in patients over 70 years old. The high morbidity and mortality in the elderly is attributed to:

- difficulty in diagnosis due to vague clinical history and physical signs from the patient.
- associated major medical illnesses in the elderly.
- use of NSAID has been implicated in the occurrence

- of silent perforation in the elderly.
- tolerance of pain and hence delay in presentation to hospital.

#### **Perforation of long standing ulcers:**

Long standing peptic ulcer perforation predisposes a patient to generalized peritonitis. The series has seven patients who came more than three days after perforation. The delay was caused by two factors “silent” chronic ulcers, which perforated without warning signs. Because of history of heavy consumption of alcohol and ingestion of much food at parties, acute gastritis was the initial diagnosis.

It is true that different individual bodies react differently to perforation. Some perforations may be sealed off by the omentum while in others peritonitis may immediately follow perforation.

#### **Pre-operative shock:**

This variable can readily be determined by clinical assessment and laboratory parameters. The clinical parameters include level of consciousness, temperature of the extremities, colour of mucous membranes, blood pressure, pulse and respiratory rate. The laboratory parameters include serum electrolytes, haematocrit, serum creatinine and radiology.

#### **Concurrent major medical illness:**

The major medical illnesses tend to fall in the group of multiple organ system failure. Such patients fall into the group of “very poor surgical risk patients”. Each patient should be considered on his or her own merit.

#### **Recommended surgical options for managing perforated duodenal ulcers.**

##### **i. Non-operative procedure**

A randomized trial of non operative treatment for perforated peptic ulcer<sup>9</sup> to determine whether surgery could be avoided in some patients with perforated peptic ulcer concludes that in patients with perforated peptic ulcer, an initial period of non operative treatment with careful observation may be safely allowed except in patients over 70 years old, and that the use of such an observation period can obviate the need for emergency surgery in more than 70 percent of patients. Today, such conservative non-operative treatment is a rare option and is not recommended in Uganda.

##### **ii. Simple omental patch closure**

Among the various surgical options for the treatment of perforated ulcers, simple omental patch closure with meticulous peritoneal toilet is regarded as the safest. The death rate for patients submitted to simple suture as the main surgical procedure, however, is only 5 – 7 %. Patients who are critically ill, who poorly tolerate any operation and hence poor surgical risks and where the perforation is associated with pre-operative shock and peritonitis, operation should not be prolonged. These patients require urgent, adequate resuscitation and simple suture with omental patch.

Simple closure alone should be followed by long-term ulcer therapy and *Helicobacter pylori* eradication where indicated. *H.pylori* eradication results in marked reduction or abolition of ulcer recurrence. Now, most individuals with duodenal and gastric ulcers can be treated effectively using one of several multi-drug regimens. Treatment usually involves an acid blocker (proton pump inhibitors like omeprazole or lansoprazole; or H<sub>2</sub> blockers like ranitidine) or bismuth or a combination of the two. In addition, the patient also takes two or three antibiotics, commonly a combination of amoxicillin, clarithromycin, metronidazole or tetracycline.

##### **iii. Definitive operations.**

A definitive ulcer-treating procedure should only be considered in the haemo-dynamically stable patient and in the absence of gross contamination. Definitive procedures should be reserved for those familiar with the technique and in cases where gross duodenal distortion or large perforation prevents satisfactory patch closure. This may be followed by serious complications such as diarrhoea, dumping, and alkaline reflex gastritis.

**1. Vagotomy and drainage**– vagotomy is the cutting of branches of the vagus nerve and can greatly reduce acid production. Cutting through the entire nerve, though, can also interfere with the stomach’s ability to empty itself. Therefore, a means of drainage must be created. This may be done with one of the following:

- **Pyloroplasty** – widening of the opening between the stomach and the first part of the duodenum, allowing stomach contents to flow more easily into the intestine.
- **Gastroduodenostomy** – creation of a new opening to connect the stomach and the duodenum.
- **Gastrojejunostomy** – creation of a new opening to connect the stomach and the jejunum (the second part of the small intestine).

**2. Highly selective vagotomy** – a technique that cuts only part of the vagus nerve. This type of surgery does not require extra means of drainage.

**3. Vagotomy with antrectomy** – cutting of the vagus nerve combined with removal of the lower part of the stomach (antrum). The antrum produces a hormone that stimulates the stomach to secrete digestive juices. Without that hormone, acid production drops.

## CONCLUSION

The final decision on the appropriate surgical intervention for patients with perforated duodenal ulcer stratifies them into two groups:

The previously fit patients who have relatively mild physiological compromise imposed on previously healthy organ system by the perforation can withstand the operative stress of definitive procedure. This should be done provided that the patient is potentially curable, the surgeon is skilled and the operating conditions are satisfactory.

Second category includes patients who are critically ill, who poorly tolerate any operation and hence poor surgical risks. These required urgent, adequate resuscitation and simple suture with omental patch.

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