

Peritonitis from Gastroduodenal Ulcer Perforation: Four Years' Experience in a Sub-Saharan Hospital

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ABSTRACT

*Introduction: Peritonitis from gastroduodenal ulcer perforation is a severe, life-threatening condition with no standardized treatment approach. This study aims to analyse the epidemiology and evaluate the therapeutic and evolutionary management methods for gastroduodenal ulcer perforations. Materials and Methods**:* Over a four-year period, a retrospective study was conducted on 70 patients admitted to the surgery department of the Amities' Hospital in Nouakchott (a tertiary structure) for peritonitis due to gastroduodenal ulcer perforation. *Results:* Among the 875 abdominal emergencies operated on in our department, 70 patients (8%) presented with peritonitis due to gastroduodenal ulcer perforation, including 63 men and 7 women, with an average age of 37.64 years (range: 16-64 years). Surgical intervention involved simple suturing of the perforation edges. Immediate postoperative outcomes were straightforward in 45 patients, and there were 2 recorded deaths. The average hospital stay was 6.22 days, with a range of 4 to 20 days. *Conclusion:* Peritonitis from gastroduodenal ulcer perforation is a serious condition. In Mauritania, as in some sub-Saharan countries, the effectiveness of management relies heavily on early diagnosis, technical resources, and the promptness of surgical intervention.

Keyword: peritonitis, perforation, Gastroduodenal ulcers Mauritania

INTRODUCTION

Peritonitis due to gastroduodenal ulcer perforation is a major medical-surgical emergency in Mauritania, where socioeconomic factors and limited healthcare access exacerbate the situation. Gastroduodenal ulcer progression can lead to complications, one of the most common being perforation, which causes peritonitis [1]. The incidence of these perforations is estimated at 4 to 14 cases per 100,000 inhabitants [2]. In developed countries, the frequency of gastroduodenal ulcer perforations has significantly decreased due to better management, with these perforations accounting for only 3% of abdominal emergencies and a mortality rate of 1.4% [7].

In sub-Saharan Africa, the frequency of gastroduodenal perforations varies: Vignon (3) estimates it at 13.8 cases per year. For Ngo [4] in Cameroon and Dieng in Senegal [5], gastroduodenal perforations are the leading cause of acute generalized peritonitis. Diagnosis is primarily clinical, indicated by a typical peritoneal syndrome.

Management is associated with a high mortality rate, reaching 10.7% in Chalya's series in Tanzania [6]. In Mauritania, we found no studies on peritonitis from ulcer perforation. The objective of this work is to present a retrospective study on the epidemiological, therapeutic, and evolutionary aspects of 70 cases of peritonitis from gastroduodenal ulcer perforations managed at the Amitié Hospital Centre (CHA) in Nouakchott.

MATERIALS AND METHODS

This is a retrospective study based on the records of 70 patients diagnosed with peritonitis due to gastroduodenal ulcer perforation (PPPU) and treated in a tertiary hospital over the period from December 1, 2017, to December 1, 2021. Included were all patients over 15 years of age with gastric or duodenal ulcer perforation confirmed by laparotomy. All incomplete records were excluded.

An exploitation sheet was created for each patient file, including demographic, therapeutic, and evolutionary aspects. The data were entered, reviewed, and analyzed using SPSS 26.0.

RESULTS

Among the 875 operated abdominal emergencies, 70 patients had a perforated peptic ulcer (PPU), representing an 8% incidence. The male-to-female ratio for these perforations was 9:1. The average age was 37.64 years, with an age range from 16 to 64 years. The most affected age group was between 26 and 35 years, comprising 33 patients (47.14%).

Only 6 (8.7%) of patients had a confirmed history of ulcers. Low socioeconomic status was found in 35(50%) patients. During the fasting month of Ramadan, 15(21.42%) patients were observed, 38(54.28%) patients were smokers, and 7(10%) patients were taking anti-inflammatory medications.

The medical management for all patients included establishing a large-caliber IV-line, urinary catheter, nasogastric tube with aspiration, fluid resuscitation with crystalloids, broad-spectrum antibiotics, and double-dose proton pump inhibitors.

Surgical treatment involved a supraumbilical midline laparotomy in 53 cases and a xypho-pubic laparotomy in 17 cases. This included aspiration of peritoneal fluid, suturing of the perforation, peritoneal lavage with warm saline, and abdominal drainage for all patients. None of the patients underwent laparoscopic surgery.

Immediate postoperative outcomes were documented in 51 records. Of these, 45 patients (64.28%) had uncomplicated recoveries. Various complications were observed in 6 patients: 4 cases of postoperative peritonitis (5.71%) and 2 cases of wound infection (2.85%). Bowel function resumed on average by the third day, with digestive suction removed on average by the fourth day, and abdominal drains removed between the third and fifth days. The average hospital stay was 6.22 days, with a range of 4 to 20 days.

Follow-up was not documented in all cases; however, there were 1 case of postoperative bowel obstruction, 1 recurrence of PPU, and 5 cases (7.14%) of postoperative ventral hernia. The mortality rate in our series was 2.85% (2 cases).

DISCUSSIONS

In this study, peritonitis due to perforation of a gastroduodenal ulcer (PPU) represents 8% of all abdominal emergencies, results that are similar to those found by Benkiran (7.3%) in Morocco [8] and Brahim (9.5%) in Mali [9]. Among our patients, there was a marked male predominance with a male-to-female sex ratio of 9, as reported by AIT MOHCIN (93%) [10] and HELGOUARC (91%) [11]. This difference could be explained by the predominance of smoking among men. The average age in our series was 37.64 years, with extremes ranging from 16 to 64 years, comparable to the average age reported by Kafih (36 years) [12] in Morocco. The most affected age group was between 26 and 35 years, with 33 patients, or 47.14%, similar to the results found by DIABBY [22] in BAMAKO and YOUSSEF S [23] in TUNISIA.

Bener et al. [13] reported in a study that the two main causes of perforation are *Helicobacter pylori* infection and the use of nonsteroidal anti-inflammatory drugs (NSAIDs). Various surgical techniques have been described for treating perforated gastroduodenal ulcers: simple ulcer suturing with or without omental patch, two-thirds gastrectomy, and, less commonly, vagotomy (truncal, selective, or highly selective) with antrectomy or pyloroplasty [14].

Currently, there is no consensus on the therapeutic management of this complication. C. Mouly et al. [17] noted that some important aspects, such as the role of non-operative treatment, the choice of surgical approach (laparoscopy or laparotomy), and the most appropriate emergency procedure, are still under debate.

Surgical treatment remains the standard of care for perforated gastroduodenal ulcers, and laparoscopy, with its proven benefits, is now widely accepted. Various surgical techniques have been described for treating perforated

gastroduodenal ulcers: simple suture of the ulcer with or without omental patch, two-thirds gastrectomy, and more rarely, vagotomy (truncal, selective, or highly selective) with antrectomy or pyloroplasty [14] .

Abdominal lavage is a standard procedure regardless of the surgical intervention performed. Abdominal drainage, though commonly used and accepted by most surgeons, may increase infection rates by 10% and does not reduce intra-abdominal collection rates (40% with drainage vs. 34% without drainage) nor suture fistula rates [15] . In our series, all patients had abdominal drains placed.

There is no established antibiotic regimen for managing perforated gastroduodenal ulcers. Pai et al. [25] reported that dual empiric antibiotic therapy targeting enterobacteria, particularly *Escherichia coli*, and anaerobic bacteria, especially *Bacteroides fragilis*, is necessary as soon as the diagnosis is confirmed. In our study, all patients received triple antibiotic therapy including beta-lactams, aminoglycosides, and imidazoles.

In this study, treatment was continued for 48 hours in the absence of severe symptoms, with subsequent therapy targeting *H. pylori* eradication, consistent with Pai et al. [25] .None of our patients underwent laparoscopy; all were operated on by supraumbilical (53 patients) or xypho-pubic (17 patients) laparotomy with simple edge suturing, peritoneal lavage, and drainage.

The average intervention time was 24 hours, with extremes between 12 and 48 hours. The duodenal location of the perforation was the most common in various studies, as shown in Table 1.

Table 1. Perforation Site According to Different Authors

Authors	Number of cases	Gastric ulcer (%)	Duodenal ulcer (%)	Countries
GISBERT [27]	16	20.3	79.7	ETHIOPIE
CANOY [26]	68	8.9	91.1	NIGERIA
YANGNI A. [28]	80	18.7	78.7	COTE D'IVOIRE
DIABY [22]	302	59.9	39.4	MALI
NOTRE SERIE	70	27.14	72.85	MAURITANIE

In this study, the average perforation size was 6 mm, while Jhobta in Mali and Siu in Ghana reported average sizes of 7.2 mm and 5 mm, respectively.

Overall mortality varies and is correlated with advanced age, unstable hemodynamic status, ulcer size, and gastric location. In our series, we recorded 2 deaths (2.85%). Table 2 shows variable mortality rates from different studies conducted in Africa.

Table 2. Mortality rate compared to other studies

Authors	Mortality (%)	Countries
GRASSI [20]	9.8	MALI
SIU [21]	8	GHANA
SIDDEYE [24]	4.2	MALI
COULIBALY [18]	5	MALI
YOUSSEF [23]	4	TUNISIE
YANGNI ANGATE [28]	10	COTE D'IVOIRE
NOTRE SERIE	2.85	MAURITANIE

Our results are similar to those of Youssef [23] and Siddeya [24].

CONCLUSION

Peritonitis due to perforation is a common complication in the progression of gastroduodenal ulcer disease, influenced by factors such as low socioeconomic status, smoking, fasting during Ramadan, and the use of nonsteroidal anti-inflammatory drugs.

In Mauritania, as in some Sub-Saharan countries, this peritonitis is more common among men, with a predominant duodenal location. Due to limited technical resources, surgical treatment is still performed through conventional laparotomy. The outcome is generally favourable, though complications may occur, sometimes leading to death.

CONFLICTS OF INTEREST

None.

AUTHOR CONTRIBUTION

All authors have reviewed and approved the final manuscript

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