

Post-Traumatic Duodenal Rupture at the Fousseyni Daou Hospital in Kayes, Mali: A Case Report

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How to cite this paper: Sidy, S., Gaoussou, S., Issaga, T.L., Mamaye, K., Drissa, K., Lassana, G., Sadio, D., Allassane, T., Tientigui, D.B., Drissa, T. and Adegné, T. (2022) Post-Traumatic Duodenal Rupture at the Fousseyni Daou Hospital in Kayes, Mali: A Case Report. *Surgical Science*, 13, 300-306. <https://doi.org/10.4236/ss.2022.136038>

Received: April 18, 2022

Accepted: June 27, 2022

Published: June 30, 2022

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Abstract

Lesions resulting from duodenal involvement are rare. Their diagnosis and management remain difficult because of the topographic location of most of the duodenum in the retroperitoneum. We report a case of isolated duodenal rupture. At the time of the first operation, the duodenal lesion had gone unnoticed. During our management, we discovered a rupture of the lower knee of the second duodenum and we performed a triple anastomosis after the closure of the ends (proximal and distal). The immediate postoperative course was complicated by the death of the patient on the second day of surgery. Duodenal lesions have much mortality which is increased by the delay in diagnosis and management.

Keywords

Emergency, Duodenal Rupture, Abdominal Contusion

1. Introduction

Duodenal injuries during abdominal contusions are quite rare. Their surgical management poses many problems due mainly to the retroperitoneal location of most of the duodenum as well as the proximity of many vessels and the presence of bilio-pancreatic and gastrointestinal secretions. They are most often observed

in context of polytrauma 90% [1]. Preoperative diagnosis is difficult because less than 10% of duodenal lesions are diagnosed before surgery [2]. Furthermore, 20% of lesions go unnoticed during the initial surgery [3]. These diagnostic difficulties are most often responsible for delays in the management of these lesions. Other lesion associations (pancreas, liver, or intestine) exist in 40% of cases [3], which complicates not only the prognosis but also the management of these lesions. There is no consensus on the surgical technique which ranges from simple primary suture to complex lesions of duodeno-pancreatic resections depending on the severity of the lesions. The overall mortality is not negligible between 4 and 47%, essentially increased by the diagnostic delay, the frequency of associated lesions and the technical difficulty. We report a case of an isolated post-traumatic duodenal rupture in order to discuss the diagnostic, but especially therapeutic and prognostic aspects.

2. Observation

The patient was a 40-year-old merchant with no known medical history, admitted to the emergency department four days after an abdominal contusion and two days after his first operation for moderate hemoperitoneum. He was a victim of a road accident (it was a contusion caused by a bundle of wood) and there was an impact located in the right para and supra umbilical region. After the accident, the patient was taken directly to a local clinic where an ultrasound scan showed an epigastric parietal rupture associated with a medium-sized peritoneal effusion without any lesion on the solid organs. After this first operation, the aftermath was marked by a discharge through the laparotomy wound of bilio-pancreatic liquids mixed with food debris; hence the decision to evacuate the patient to the hospital.

On physical examination, he was classified as WHO 3, temperature 38.2°C, pulse 108 btts/mn, tongue was sabral, there was generalized abdominal distension, a median laparotomy wound above and below the umbilicus with bilious fluid mixed with food debris, generalized abdominal contracture, an umbilical cry and a douglas cry.

We retained the diagnosis of peritonitis by perforation of a hollow organ. A blood count as well as the rhesus grouping were carried out in emergency. These examinations revealed a disturbance of the leukocyte count with white blood cells to 18,000 leukocytes/mm³, a hemoglobin level of 8.2 g/dl, and an A+ blood group. The patient received two units of iso-rhesus grouped blood preoperatively and one unit intraoperatively.

Intraoperatively we aspirated about 600 mm³ of bilio-pancreatic fluid mixed with food debris, and the exploration revealed a rupture of the lower knee of the second duodenum without other associated lesions; an important peritoneal inflammation.

We proceeded to the revival then to the closure of the two ends (proximal and distal) of the second duodenum (see **Figure 1**) followed by a jejuno-duodenal anastomosis (see **Figure 2**), a gastro-jejunostomy (see **Figure 3**) and an anastomosis at the foot of the loop (see **Figure 4**), cleansing, verification of the haemostasis

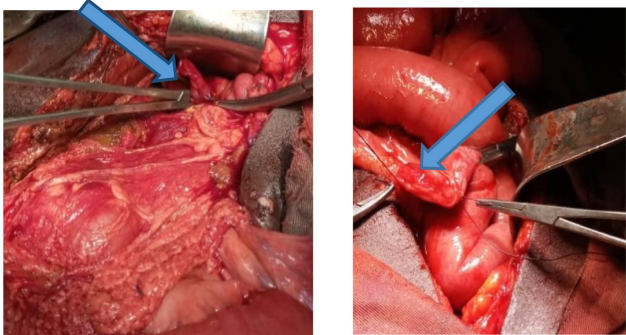


Figure 1. Proximal end; Distal end.

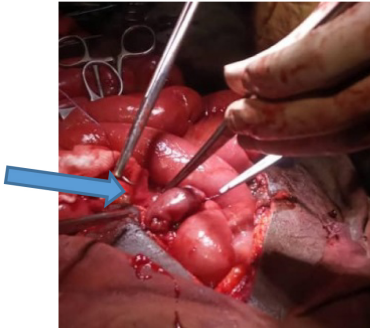


Figure 2. Jejunoduodenal anastomosis.



Figure 3. Gastro-jejunosomy.

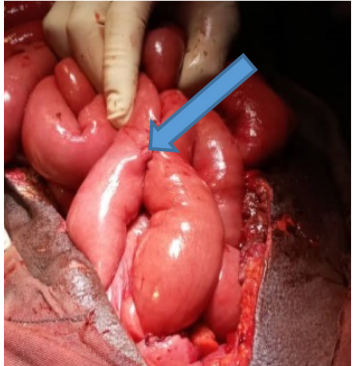


Figure 4. Anastomosis at the foot of the ansese.

which was satisfactory, peritoneal drainage and closure plane by plane and dressing.

The aftermath was complicated by poly visceral failure and the patient died on day 2 post operatively.

3. Discussion

During abdominal contusions, small bowel injuries rank 3rd out of all injuries 3 and 18% [4] [5]. They represent about 0.5% to 15% of all abdominal injuries [6] [7]. Duodenal injuries are rarer and represent 3% to 5% of cases and are often associated with injuries to other organs [8].

They cause a morbidity and mortality rate of up to 39%, especially in cases of delayed diagnosis and management [9].

The etiology remains dominated by stroke, which is the first cause [10], but there are other causes linked to attacks, most often with firearms [6] [7] [11].

Duodenal damage can result from several mechanisms (either by a sudden increase in intra-luminal pressure or by compression between the anterior abdominal wall and the spinal column) which acts as a log on which the duodenal-pancreatic block comes into contact [12] [13]. Our patient collided with a cart filled with bundles of wood, resulting in a contusion in the right supraumbilical region with rupture of the rectus abdominis muscle without any skin invasion.

The diagnosis of duodenal injury is difficult because less than 10% of duodenal injuries are diagnosed before surgery [2]. The diagnosis is most often made during surgery; however, it may also be missed during the initial procedure, hence the need to explore the entire duodenal framework [14].

The key to the diagnosis of duodenal lesions lies in a strong clinical suspicion related to the lesion mechanism, but, the use of complementary examinations is often necessary [12]. An unprepared abdominal radiograph can help in the diagnosis by showing either pneumoperitoneum or air in the retroperitoneum. Abdominal computed tomography (CT) is the reference examination [15] in hemodynamically stable patients [12] [16] [17]. It allows the detection of pneumoperitoneum, parietal pneumatosis or fluid effusion without solid organ damage [15]. However, CT rarely shows the exact location of the intestinal lesion.

In our case, the clinical examination after the initial laparotomy allowed us to suspect perforation of a hollow organ by the exit of bilio-pancreatic secretions and food debris through the initial laparotomy wound.

The surgical technique remains controversial and depends on several criteria, namely: the size of the lesion, the number of perforations and the existence of associated lesions [18] and [19].

In isolated and fresh lesions, simple procedures such as a primary suture (with or without epiplasty) or even resection with anastomosis may be sufficient [12]. In severe lesions, a digestive bypass may be associated. This may involve placement of a jejunostomy tube with or without pyloric exclusion [20]. Other complex lesions may require Stone's triple ostomy (gastrostomy, duodenostomy and

jejunostomy) which is not easy to perform and the results are not always satisfactory [2] [21] [22]. Resections with duodenal anastomosis in case of D1, D3 or D4 lesions [12] are recommended when the wound is large and the primary suture could lead to duodenal stenosis.

The complete section of the lower knee of D2 and the existence of a significant inflammatory reaction had imposed closure of both ends (proximal and distal) followed by a jejunoduodenostomy; a gastrojejunostomy and anastomosis at the foot of the loop.

This technique, like duodenal diversion and pyloric exclusion, is reserved for severe duodenal injuries or when management is delayed in the presence of significant tissue oedema [22] [23].

Overall mortality remains high [12] [23]. In a series of 2220 patients with isolated duodenal perforation, mortality was 6.6%. This mortality is higher when there is a delay in diagnosis and management.

Lucas reported a mortality of 11% in patients with duodenal injury treated within 24 hours compared to 40% if treatment was delayed for more than 24 hours [18]. Our patient underwent reoperation more than 72 hours after the accident.

4. Conclusion

Duodenal perforations are rare and difficult to diagnose and manage. Mortality remains high and is increased by a delay in diagnosis and management. There is no consensus on the surgical technique. We recommend a complete and meticulous exploration of the entire duodenal framework during the initial operation in case of suspected duodenal injury.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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