

Penetrating Abdominal Stab Wounds. Laparotomy or Selective Surgical Abstention: Practice About 28 Cases at University Hospital of Treichville

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Abstract

Background: Management of penetrating abdominal stab wounds is not consensual and represents a medical and surgical challenge. The aim of this work was to study diagnostic, therapeutic and evolutionary aspects.

Patients and Methods: This retrospective study was carried out at the University Hospital of Treichville, over a period of 28 months going from May 2014 to September 2016. 28 patients were admitted in emergency for a penetrating abdominal stab wound. Two groups were constituted. Group I: 11 patients hemodynamically stable without signs of peritonitis, were monitored. Group II: 17 patients were operated in emergency for peritonitis (n = 14) or shock (n = 3).

Results: Surgical indication was essentially based on clinical examination. Ultrasound, Abdominal x-rays and Blood counts contributed each in 1 case (5%). In group II, the laparotomy was negative in 1 case (5.88%) and another case of wound infection was observed. In group I, 3 patients were secondarily operated (27.27%) without complications. Overall mortality was zero.

Conclusion: Selective management of penetrating abdominal stab wounds can be done safely with various protocols under cover of monitoring.

Keywords: *Abdomen; Penetrating Wounds; Stab Wounds; Non-Operative Management; Laparotomy*

Abbreviations

CBC: Complete Blood Counts; AXR: Abdominal X-Ray; US: Ultrasound

Introduction

The management of abdominal trauma and penetrating abdominal stab wounds in particular, has gradually changed during recent years thanks to advances in intensive care management and medical imaging. The dogma of systematic laparotomy is no longer relevant in hemodynamically stable patients without signs of peritonitis [1]. While non-operative treatment was commonly proposed in developed countries, the problems of clinical and radiological surveillance were the main arguments against this method for some African authors [2-5]. To date, the management of penetrating abdominal stab wounds is not consensual and represents a medical and surgical challenge with various protocols and adapted to the means of the host institution. In all case, the objective was to reduce the rate of unnecessary laparotomies, which varied from 23 to 53% [6].

We report our experience through this study in order to study the diagnostic, therapeutic and evolutionary aspects.

Patients and Methods

This was a retrospective study done in the Digestive and Proctologic Surgical Unit at University Hospital of Treichville for a period of 28 months going from May 2014 to September 2016. It involved 28 patients, all male, with an average age of 27 years, ranging between 16

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and 46 years. They were admitted in emergency for a penetrating abdominal stab wound. Almost all patients experienced an aggression (89.29% - n = 25). All patients had a preoperative assessment with pre-anesthetic consultation and intensive care management. They were divided into two groups according to the clinical presentation:

- Group I: 11 patients were hemodynamically stable without signs of peritonitis. They were treated by a debridement and suture of the wound; In 6 cases of omental evisceration, partial omentectomy was performed. Intensive care was continued under surveillance with repeated physical examination and para-clinical assessment by CBC, AXR and abdominal US.
- Group II: 17 patients underwent emergency surgery for peritonitis (n = 14) and hemoperitoneum with shock (n = 3).

We studied:

- Clinical, para clinical and therapeutic evolution of Group I patients.
- Site of the lesions, the surgical procedure in Group II patients.
- Evolution (mortality, morbidity) and hospital stay of the operated patients.

Results

About Group I patients

At clinical plan, the evolution was complicated in 3 cases (27.3%):

- Two cases of peritonitis registered 24 and 72 hours after surveillance.
- One case of hemoperitoneum and shock 24 hours after surveillance.

At para clinical plan, CBC had revealed a drop in hemoglobin from 10.8 g/dl to 8.7 g/dl 24 hours after surveillance in the patient who presented hemoperitoneum and shock. AXR had revealed a pneumoperitoneum in one of the cases of peritonitis. Abdominal ultrasound did not find any organ damage but it showed a small hemoperitoneum in 5 cases including the patient who presented the shock and one of the peritonitis.

At therapeutic plan, these 3 patients have been secondarily operated. The surgical lesions and procedure are summarized in table 1. The additional intervention rate was 27.3%.

Patients	Intra -operative lesions	Treatment
Peritonitis on 24 hours	4 Jejunal wounds	Resection-anastomosis
Peritonitis on 72 hours	1 Jejunal wound	suture
Hemoperitoneum + shock on 24 hours	Active bleeding splenic wound	Splenectomy

Table 1: lesions and surgical procedure in group I patients secondarily operated.

Three patients were additionally operated, or 27.3% (n = 3/11) with favorable outcome.

The evolution of the other patients who were not operated was also favorable (n = 8/11). The mean length of hospital stay was 3 days which ranged from 2 to 7 days.

About Group II patients

The laparotomy's findings were summarized in table 2. The surgical procedures were:

- Suture or resection-anastomosis for digestive tract lesions.
- Hemostatic suture for hemorrhagic lesions of the liver, mesentery, meso-colon and omentum.
- Splenectomy for hemorrhagic splenic injury.

Seat of lesions	Frequency
Ileum	8
Colon	6
Jejunum	5
Stomach	2
Liver	2
Kidney	1
Mesentery	2
Spleen	2
Mesocolon	1
Omentum	2

Table 2: Distribution of lesions according organs in laparotomy.

A negative laparotomy was observed in one case (peritoneal syndrome with evisceration of the small bowel) or 5.9% (n = 1/17) of patients operated on first-line therapy.

The mortality of operated patients was nil.

Twenty patients (71.42%) were operated on, of which 17 as first intention and 03 as second intention.

he operative follow-up was uncomplicated for 19 patients (95%).

One complication was observed in 5% of patients. It was a suppuration from the point of entry of the stab wound that extended to the wall of necrotizing fasciitis. It required debridement with local care with successful outcome.

The mean hospital stay for operated patients was 11 days with extremes from 5 to 47 days.

Discussion

The management of penetrating abdominal wounds is a subject of controversy. The debate, centered on the risk of unnecessary laparotomies with their complications and potential sequels, is today oriented towards the early identification and treatment of visceral lesions safely. In our study, the selected patients was monitored by a repeated clinical examination, CBC, AXR and abdominal US. Clinical examination revealed 2 cases of peritonitis; it is the best way to detect hollow perforation [7]. Biologically, CBC allowed us to suspect persistent bleeding by the drop in hemoglobin at a patient with hemoperitoneum. Splenectomy was performed successfully in presence of hemorrhagic splenic lesion. In the algorithm proposed by Biffi, *et al.* [8], the drop of hemoglobin rate by 3 points in hemodynamically stable patient indicated to perform CT or laparotomy.

Radiologically, AXR visualized a pneumoperitoneum; it remains a conventional radiological easily accessible, but now supplanted by CT which is recommended as the primary screening modality in hemodynamically stable patients [9]. Its use in our practice was sometimes limited by the cost. Therefore, US is employed as first line examination; its purpose is not to find specific lesions but to detect even minimal effusion [10,11]. It had not been able to highlight the splenic lesion in our patient who underwent splenectomy in 2nd intention. CT has good sensitivity to reveal lesions of solid organs. It would have supplied the inadequacy of US to reveal the splenic lesion and precise its gravity. Most splenic lesions are important, less the non-operative treatment is feasible; thus, radical splenectomy remains useful and current in adults where the risk of infection is lower [1].

Concerning the therapeutic approach, we observed one case of negative laparotomy whose indication was peritonitis with intestinal evisceration. Evisceration has long been an indication of exploratory laparotomy, but now, in case of isolated omental evisceration without other obvious digestive lesion, non-operative treatment may be established [10,12]. Six patients with an isolated omental evisceration have been treated successfully without laparotomy. The success rate of the non-operative treatment in our study was 72.7%. A South African study reported by Zafar, *et al.* [13] obtained 83.2% of success in patients selected for a non-surgical treatment with monitoring based on clinical examination alone. This report underlines the importance of clinical examination in the selection and monitoring during the non-operative treatment.

No negative laparotomy were found in 2nd intention. However, it is not possible to recommend a systematic conservative attitude in all stable patients, lack of comparative studies of quality [7]. Mortality was nil in 1st and 2nd intention, in agreement with some authors [13,14] who showed that deferred laparotomy did not increase mortality or morbidity.

The average hospital stay of non-operated patients was 3 days, lower than some African authors [2,4] who rated it 8 days. This caution is the opposite of American studies [6,15] which propose 24 to 48 hours of observation, considering that after 12 hours of abdominal surveillance without defense or contracture, the probability to miss a surgical lesion is low.

Clinical, biological and radiological monitoring in selected patients allowed us to avoid negative laparotomies without complications out of one case of parietal suppuration. So we experimented that, non-operative treatment was safely feasible with modest medical equipment.

Conclusion

Systematic laparotomy is no longer the therapeutic standard of penetrating abdominal stab wounds in hemodynamically stable patients. This study could encourage teams to develop strategies to manage the penetrating abdominal stab wounds, depending on the available resources in their structure.

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