RESULTS OF NON-OPERATIVE MANAGEMENT OF ABDOMINAL CONTUSIONS ABOUT A SERIES OF 139 CASES

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ABSTRACT

Introduction

Abdominal trauma accounts for 20 to 30% of lesions observed in traumatology. Mortality is high, around 10%, and increases beyond 40% in cases of hemorrhagic shock. The development of imaging techniques has enabled the expansion of conservative treatments. The presence of hemorrhagic shock and the assessment of its severity guide the therapeutic strategy.

Material and Methods

This was a retrospective, single-center, analytical study conducted over 5 years, from January 1st, 2019, to December 31st, 2023. Patient records were analyzed using a pre-established data collection form. We analyzed the epidemiological, clinical, therapeutic, and evolutionary data of our patients.

Results

One hundred and thirty-nine patients were included in the study. The mean age of patients was 35 years (extremes: 15 and 82 years). We included 123 men and 16 women, corresponding to a male/female sex ratio of 7.6. Road traffic accidents and occupational accidents were found respectively in 89% of cases. Clinically, shock was found in 15 patients, altered consciousness in 11 patients, and respiratory distress in 8 patients. Clinical examination noted abdominal rigidity, guarding, or abdominal tenderness respectively in 9 (6.5%), 27 (19.5%), and 21 (15.5%) cases. Abdominal ultrasonography was performed in 102 patients.

Contrast-enhanced thoraco-abdomino-pelvic CT scan was performed in 43 patients. Eleven (11) patients (7.91%) underwent surgery after failure of non-operative treatment. Morbidity and mortality were respectively 6% and 5%.

Conclusion

The currently recommended therapeutic attitude in abdominal contusions is conservative because of the development of imaging techniques such as arterial embolization. In our context, it is feasible but remains a source of failure mainly because of the absence of a complete technical platform permanently accessible to teams dedicated to emergency management.

Keywords: abdominal contusion, non-operative treatment, results, Algiers.

INTRODUCTION

Abdominal contusions represent more than 80% of abdominal trauma in France [1]. Mortality reaches 30%, most often due to hemorrhage [1]. The most frequent etiologies are road traffic accidents and, more rarely, falls and sports accidents [2]. In our context, etiologies are dominated by road traffic accidents. The violent nature of the trauma should suggest the diagnosis, especially when clinical examination is hindered by sedation or associated injuries. The organs most frequently involved are the spleen and liver (more than 70% of cases) [1,2]. Retroperitoneal lesions exist in 20% of cases and have a severe prognosis when hemorrhagic [3]. Hollow organ perforations are rare but difficult to diagnose [4].

The diagnostic and therapeutic strategy depends on the patient's hemodynamic status, abdominal examination findings, associated injuries, and available resources. In stable patients, computed tomography is the reference examination to define lesions and guide therapy [5]. Embolization is the preferred therapeutic procedure over surgery [6]. Management depends on the clinical presentation. The presence of hemorrhagic shock and the assessment of its severity guide the therapeutic strategy.

In our context, the difficulties of optimal management are often related to transfer conditions, which are not always adequate, and to the limitations of diagnostic and therapeutic management resources. The objective of our study was to evaluate the results of non-operative management of abdominal contusions as well as the feasibility of conservative treatment in the context of a developing country.

MATERIAL AND METHODS

This was a retrospective, single-center, analytical study conducted from January 1st, 2021, to December 31st, 2025. We studied patient age, sex, preoperative clinical, biological, and morphological parameters, emergency operative treatment, and the morbidity and mortality of non-operative treatment.

RESULTS

Epidemiological Data

Abdominal contusions represented 47% of all abdominal trauma cases (139 abdominal contusions among 295 abdominal trauma cases). The mean age of patients was 35 years, with extremes ranging from 15 to 82 years. We included 123 men and 16 women, corresponding to a male/female sex ratio of 7.6.

According to the American Society of Anesthesiologists (ASA) classification, patients were classified as ASA I (78.6%) and ASA II (21.4%). Trauma occurred following road traffic accidents (70%), occupational accidents (25%), or assaults (4.5%).

Diagnostic Data

Clinically, shock was found in 15 patients, altered consciousness in 11 patients, and respiratory distress in 8 patients. Physical examination noted abdominal rigidity in 9 patients (6.5%), abdominal guarding in 27 patients (19.5%), and abdominal tenderness in 21 patients (15.5%), associated with limb trauma (25 cases), thoracic trauma (23 cases), and cranial trauma (7 cases).

All clinical data are summarized in Table I.

Table I: Clinical Characteristics of Patients

Characteristics	Number	%
Shock state	15	10.79
Altered consciousness	11	7.91
Respiratory distress	08	5.75
Abdominal rigidity	09	6.47
Abdominal guarding	27	19.42
Abdominal tenderness	21	15.10

After the first stage consisting of history taking and clinical examination, management of the patient with abdominal contusion requires complementary biological and radiological examinations to ensure appropriate therapeutic management. This stage involves biological examinations including complete blood count (CBC), blood typing, hepato-renal assessment, and pancreatic assessment.

Imaging occupies a major place in the management of abdominal contusions. It should only be requested if the hemodynamic status is stable. Chest radiography showed pleural effusion in 9 cases, pneumothorax in 3 cases, and rib fractures in 11 cases.

Emergency abdominal ultrasonography was performed in all patients. It showed intraperitoneal effusion in 123 cases (moderate abundance in 91 cases) and visceral lesions in 73 cases (52.51%).

Contrast-enhanced thoraco-abdomino-pelvic CT scan performed in 43 patients (30.93%) confirmed ultrasonography findings in 89% and revealed new lesions in 23% of cases. Splenic lesions were found in 58.14% of cases. Hepatic lesions were found in 19 patients. Other lesions were also found, including one pancreatic lesion, 21 renal lesions, and 7 cranioencephalic traumas.

Table II: Lesional Assessment of Patients

Visceral lesions	**Number**	**%**
Hepatic contusions		
Contusion	21	28.76
Fracture	09	12.32
Hematoma	08	10.95
Splenic lesions		
Contusion	37	26.61
Fracture	17	2.32
Hematoma	06	8.21
Renal lesions	21	28.76
Pancreas	01	1.36
Thorax		
Hemothorax	09	6.47
Pneumothorax	03	2.15
Rib fractures	11	7.91

Visceral lesions	Number	%
Skull	07	5.03
Spine	04	1.02
Locomotor system	25	17.98

Therapeutic and Evolutionary Data

Eleven (11) patients, corresponding to 7.91% of cases, underwent surgery after failure of non-operative treatment. Emergency operative indications were progressive hemorrhagic lesions (4 cases), peritoneal syndromes related to hemorrhagic lesions (2 cases), failure to respond to resuscitation (3 cases), and unavailability of blood group supply (2 cases).

Complications observed during non-operative treatment are presented in Table III. Mortality after failure of NOM was 9%, corresponding to 1 case. It involved massive hemorrhage due to liver fracture.

Table III: Complications Observed During Non-Operative Treatment

Morbidity of NOM	Number (n=9)
Thromboembolic event	01
Acute pancreatitis	01
Pancreatic pseudocyst	01
Renal failure	02
Jaundice	03
Splenic artery pseudoaneurysm	01

DISCUSSION

Abdominal contusions represent a concerning emergency whose frequency is estimated at 80% of all abdominal trauma and 2.5% of polytrauma cases [1,2]. In our study, they represented 47% of all abdominal trauma cases. The management of abdominal trauma has evolved in favor of non-surgical treatments [3-5]. The presence of hemorrhagic shock and the assessment of its severity guide the therapeutic strategy.

In isolated abdominal trauma, the difficulty lies in establishing the severity diagnosis of the abdominal lesion. In the context of polytrauma, this difficulty is related to the existence of other associated lesions whose treatment may take priority over the abdominal lesion [5,6].

From an epidemiological point of view, our results appear identical to those reported in the literature. These abdominal contusions primarily affect young male subjects. Road traffic accidents constitute the leading etiology, followed by traffic accidents [5,6,7].

Clinically, the search for hemorrhage with possible progression to shock state as well as peritoneal irritation are functional signs that must be systematically investigated [8]. Clinical examination constitutes a key step in the evaluation and management of abdominal contusions.

First, it makes it possible to rule out a life-threatening emergency requiring resuscitation measures and sometimes emergency surgical interventions. It must be complete, looking for other extra-abdominal locations: skull, thorax, spine, pelvis, and lower limbs.

A normal clinical examination does not rule out the diagnosis of severe abdominal lesions because the initial examination is often difficult. It must be repeated at regular intervals and complementary examinations selected and directed accordingly [9,10].

Biological investigations include blood group and rhesus typing, complete blood count, blood electrolyte assessment, coagulation assessment, liver function tests, and serum lipase [10,11].

Imaging currently occupies an important place in the early management of abdominal contusions. Its objective is to assess all lesions in a patient who is often polytraumatized [11,12].

Abdominal ultrasonography is the first-line examination after clinical examination. It is recommended in all abdominal trauma patients, particularly in blunt trauma. Its sensitivity for deciding surgical intervention ranges from 88 to 93%, and its specificity from 90 to 99% [12,13]. In our series, it was performed urgently in all patients.

As for abdominal computed tomography with intravenous injection, it has now become the reference examination for emergency evaluation of blunt abdominal trauma [13,14]. It allows exploration of the entire intraperitoneal cavity and guides therapeutic management: surgery or radio-clinical monitoring in hemodynamically stable or stabilized patients [13,14].

In our series, computed tomography confirmed ultrasonography findings in 89% and revealed new lesions in 23% of cases.

Arteriography is the key examination for confirming active or delayed hemorrhage and for performing embolization when needed [15]. The latter is not available in our institution.

Following these examinations, emergency surgery is mandatory in abdominal trauma patients with hemodynamic instability or in cases of hollow organ lesions [14,15]. Damage-control laparotomy allows limited procedures aimed at controlling active hemorrhage [12-15].

In our series, emergency laparotomy was indicated in 7.9% of patients because of hemodynamic instability despite resuscitation measures. Non-operative treatment was recommended in 128 patients. This attitude was adopted because of hemodynamic stability, absence of pneumoperitoneum, and absence of cerebral lesions.

Advances in imaging have greatly contributed to the development of NOM [15]. Its indications are increasing thanks to arterial embolization and the availability of an adequate technical platform requiring a permanently available medical team, a 24-hour operating room, and a blood transfusion center [15,16].

The morbidity rate of NOM was 7.03%, and mortality was 3.12%. Our study confirmed results reported in the literature regarding the effectiveness of non-operative treatment of abdominal contusions while emphasizing its low morbidity and mortality [15-19].

CONCLUSION

The most frequent etiology of abdominal contusions is represented by road traffic accidents. Careful clinical examination is essential. New therapeutic approaches have emerged; the concept of non-surgical abstention with monitoring and non-operative treatment has developed, and surgery has become increasingly conservative.

This management requires a competent team, hence the necessity of continuous training. Prognosis essentially depends on prehospital management, lesion assessment, and early treatment.

Conflicts of Interest

The authors declare no conflicts of interest.

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