

# Management of retroperitoneal hematoma Ayad Yas khudair<sup>\*</sup>

# Abstract

Retroperitoneal traumatic lesions are among the most challenging and serious emergencies and necessitate a maximum of attention and expertise by the surgical team involved. Only with a careful judgment about the procedures to carry on it is possible to obtain valid results, which often means to safe the patient's life. This is a prospective study, which included 30 patients with traumatic retroperitoneal hematoma, admitted to Al-Hussien Teaching Hospital for the period between Dec. 2018 – Nov. 2019 (10 months). They were analyzed regarding age, sex, type of trauma, signs and symptoms, relevant laboratory tests and radiological studies, operative findings, associated organ injured, methods of treatment, postoperative complications and their mortality rate. Most patients were males (77.2%). Young age group was more frequently injured (34.85%) of patients were in their third decade. Penetrating injury was the cause in majority of collected patients (83.3%). The commonest zone of retroperitoneal hematoma was zone 2(74.24%) and the commonest site was the lateral perirenal hematoma. In conclusion, the presence of lesions on the retroperitoneum generally worsens the prognosis in traumatic pathology. All types of trauma, blunt or open, may involve retroperitoneal structures and organs. Associated abdominal organs injury may include the great vessels, pancreas, duodenum, esophagus and genitourinary apparatus. Key words: Retroperitoneum; Traumatic; Duodenum and patients

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# Introduction

The retroperitoneum is defined as the space between the posterior envelopment of the peritoneum and the posterior body wall. The retroperitoneal space is bounded superiorly by the diaphragm, posteriorly by the spinal column and iliopsoas muscles, and inferiorly by the levator ani muscles. Although technically bounded anteriorly by the posterior reflection of the parietal peritoneum, the anterior extension of the retroperitoneum is quite convoluted, extending into the spaces in between the mesenteries of the small and large intestine [1-2].

#### Ayad Yas khudair/ Muthanna Medical Journal 2020; 7(2):71-78

The retroperitoneal space contains completely or envelope anteriorly a number of visceral and vascular structures in the gastrointestinal, genitourinary, vascular, musculoskeletal and nervous system. (3) Because of the rigidity of the superior, posterior, and inferior boundaries, and the compliance of the anterior margin, RPH tend to expand anteriorly toward the peritoneal cavity [1-4]. Hematoma in the area of the portal triad in the right upper quadrant is a cause to suspect the presence of injury to the portal vein or the hepatic artery or of vascular injury combined with an injury to the common bile duct. Retrohepatic hematoma is a cause to suspect the presence of injury to the retrohepatic vena cava, a hepatic vein, or a right renal blood vessel. In addition, hemorrhage in this area may signal injury to the overlying liver [3-5]. Symptoms and signs of a RPH are most commonly a reflection of the organs injured in the retroperitoneum rather than of the hematoma itself. Abdominal pain, abdominal tenderness, and back pain may be present. The diagnosis of RPH is most difficult following blunt trauma to the abdomen and should be suspected in any patient following trauma who had signs and symptoms of hemorrhagic shock but no obvious source of hemorrhage. Grey Turner's sign is usually not present in the first few hours after injury and is, therefore, not a helpful sign in diagnosis [6]. Plain films of the abdomen are useful in patients with RPH from blunt pelvic fractures as the location and magnitude of the fracture can be assessed. In like fashion, a plain film in a patient with a penetrating wound from a missile will localize the site of the missile and give some indication of which major retroperitoneal vascular structure has been injured. An intravenous pyelogram and retrograde cystography can be used to evaluate patients with kidneys ureters and bladder injuries [7]. CT is now commonly used to evaluate patients with RPH. Based on abdominal computed tomography (CT), hematomas can be classified as mild (fat stranding), moderate (obliteration of fat), or severe (organ displacement due to hematoma) [8]. The presence of lesions on the retroperitoneum generally worsens the prognosis in traumatic pathology, it implies more attention and skills from both the medical and surgical aspect [9]. All type of trauma, blunt or open, may involve retroperitoneal structures and organs [10].

#### Patients and methods

This prospective study was carried out at AL-Hussien Teaching Hospital in the period of Dec. 2018 – Nov. 2019 (10 months). Thirty patients with RPH due to traumatic injuries were enrolled in this study. All patients were managed in this hospital. A standardized data form was prepared and used for the purpose of collecting data by first hand.

Non-traumatic RPH were not included in this study. The gathered information included; Age, sex, type of trauma, site of injury on the abdominal wall, signs and symptoms, relevant

laboratory tests and radiological studies, operative findings, associated organ injured, methods of treatment, postoperative complications and the mortality rate.

These data and information will be analyzed and the results will be shown in the form of figures and tables. All patients were admitted to the casualty department. They were resuscitated and managed as indicated. They had complete examination. Blood sample was taken for blood grouping and cross matching. General investigations (general urine examination, PCV, blood sugar and blood urea) were done when indicated.

Investigations such as U/S and CT scan were used in few cases when indicated and when available.

Shock at presentation was taken with consideration for laparotomy. During laparotomy, RPH was either explored or left undisturbed according to type of trauma, site of hematoma expanding changes.

# Results

Thirty patients with RPH were studied. The number of patients managed surgically for abdominal trauma at Al-Hussien Teaching Hospital during the period of the study was 200. Those patients with RPH constitutes 30%. Sixteen patients (77.3%) were males and fourteen (22.7%) were females (figure 1).



Male: Female ratio is 3.4:1. Age range is (1-65years). Most patients, 23 (34.85%) were in the third decade, followed those in the fourth decade which include 14 (21.2%) patients. (Table 1).

# Table 1.

Age distribution of patients

Age group	No.	Percentage
0-9 yr.	4	(6%)
10-19 yr.	6	(19.7%)
20-29 yr.	7	(34.85%)
30-39 yr.	6	(21.2%)
40-49 yr.	2	(12.2%)
50-59 yr.	3	(4.55%)
60-69 yr.	2	(1.5%)
Total	30	100%

Of the penetrating injuries, 37(56.6%) patients were due to bullet injuries, and 18(27.27%) were due to shell injuries, with no stabbing injuries. Of the blunt trauma patients, 7(10.6%) were due to road traffic accidents and 4(6.07%) were due to fall from height. Table (2).

## Table 2.

Types of injuries

Type of injury		No.	Percentage
Penetrating	Bullet injury	9	(56.06%)
Injury	Shell injury	10	(27.27%)
Blunt Injury -	RTA	6	(10.6%)
	FFH	4	(6.07%)
	Total	(30)	100%

The symptoms and sings associated with RPH are; pain in 58 (87.8%) patients, tenderness in 56 (84.8%), shock at presentation in 44 patients (66.6%), and haematuria in 18 patients (27.27%). (Table 3).

## Table 3.

The symptoms and sings associated with retroperitoneal hematoma

symptoms and sings	No.	Percentage
Pain	58	87.8%
Tenderness	56	84.8%
Shock	44	66.6%
Hematuria	18	27.27%

The kidney was the commonest organ injury in association with RPH and included 18 (27.27%) patients. Regarding retroperitoneal organ injury, the kidney was the commonest organ injury followed by pancreas and duodenum. Injury to the pancreas was found in 4(6.06%) and duodenal injury occur in 4(6.06%). Two (3%) patients had IVC injury, 2 (3%) had vertebral injury and only one patient (1.5%) had aortic injury

The small bowel was the commonest associated intraabdomenal organ injury; it affected 12 (18.18%) patients. Large bowel injury occurs in 10 (15.15%) patients, followed by the liver in 8(12.12%) patients. Injury to spleen occurs in 5 (7.75%) patients. Table (4).

### Table 4.

Associated injuries

Organs	No.	Percentage
Kidneys	18	27.27%
Small bowel	12	18.18%
large bowel	10	15.15%
Liver	8	12.12%
Stomach	5	7.57%
Spleen	5	7.57
Pancreas	4	6.06%
Duodenum	4	6.06%
Urinary bladder	5	%7.57
Mesentry	3	4.54%
Ureter	2	3%
Gallbladder	1	%1.5
Aorta	1	1.3%
IVC	2	3%
Lung	5	7.57
Spinal cord	2	3%
Limbs	14	21.2%

#### Discussion

In our collection, penetrating injury was the cause in (83.3%) of patients. This is due to the situation in Al-Muthanna government during the period of the study. In most studies, RPH caused by blunt trauma are more common than that produced by penetrating injuries. In studies from Germany, the blunt trauma accounted for (80%) of RPH [11].

In other studies, from Spain, blunt trauma was commoner than the penetrating injury in causing RPH [12]. Most of patients in our collection were males. This is usual in most studies [13-14]. In our collection, males constitute (77.2%) of cases. This is due to the outdoor activity of males in our society making them more vulnerable to violent activities. Regarding the most affected age group in our collection was the third decade in 34.85% of cases followed by the fourth in 21.2%. Most literatures revealed that young age groups are mostly affected [15-16].

Hypovolemic shock in cases of RPH is a constant finding which reflect severity of condition, in this study, it accounts for 66.6% of cases. This was a fact in many published literatures. [17-18]. In Italian study hypovolemic shock occur in 60% of cases with RPH [19].

After resuscitation, the decision of exploration depended mainly on clinical judgment. This is recommended in unstable patients. Stable and unsettled decision requires special investigations such as U/S, CT and FAST. In our study, these were used in limited number. This is because most of our patients had severe injuries and in part due to limited availability of these tests.

In our series, (80%) had associated intraperitoneal organ injuries, the small bowel was the second commonest associated injury, while the kidney was the commonest organ injury in association with RPH. In our collection, four out of 6 patients with midline RPH had major vascular injury (two with inferior vena cava injury, one patient had aortic injury and one patient had portal vein injury). All were due to penetrating trauma apart from one due to blunt trauma with pancreatic injury. Four patient of this zone were associated with pancreatic injury 3 of them due to penetrating injury without pancreatic duct injury were treated by debridement and drainage, other one due to blunt trauma was treated by distal pancreatectomy which indicated because of destructed distal pancreas.

There is general agreement that the midline supramesocolic and inframesocolic hematoma should be explored after obtaining proximal and, if possible, distal vascular control because of the high incidence of major vascular or visceral injury associated with them [20-21]. In the literature, most cases in this group are associated with injury to the pancreas and their management according to the type of injury [22].

Regarding the type of perirenal hematoma, in our study, all patients with such type were explored. Eighteen out of 25 patients had renal injury and nephrectomy was done for 9 of them due to severe injury of the kidney which were of grade IV and V. All of them were due

to penetrating injury apart from two patients with blunt injury. So, exploration of perirenal hematoma especially those due to penetrating injury are necessary due to the high percentage of positive findings.

In the literature, regarding hematomas in perirenal area, patients who had sustained blunt abdominal trauma but in whom preoperative intravenous pyelography, renal arteriography, or abdominal CT confirms that a reasonably intact kidney is present, there is no justification for opening a perirenal hematoma. In highly selected stable patients with penetrating wounds to the flank, there are some data to justify performing preoperative CT scan. On occasion, documentation of an isolated minor renal injury in the absence of peritoneal findings on physical examination makes it possible to manage such patients nonoperatively. In all other patients with penetrating wounds, when a perirenal hematoma is found during initial exploration, the hematoma should be unroofed and the wound tract explored [23-24].

# **Ethical Approval**

The study was approved by the Ethical Committee.

# **Conflicts of Interest**

The authors declare that they have no competing interests.

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