

## DELAYED SPLENIC RUPTURE – A CASE REPORT

M. HOGEA<sup>1,2\*</sup> I. TOADER<sup>1</sup> C. COBELSCHI<sup>1 2</sup>  
A. GHEORGHIU<sup>1</sup> A. MIRONESCU<sup>2</sup> A. PASCU<sup>2</sup>

**Abstract:** *The concept of delayed rupture of the spleen was first described in the late XVII century. It is defined as a splenic bleeding that occurs after more than 48 hours after blunt trauma.*

*We presented the case of a 33-year-old man who was admitted to the hospital for sharp abdominal pain, increased with inspiration. Thirty days ago, he was involved in a motor vehicle collision and was hospitalized for 25 days in the orthopaedic department. At that time, the abdominal CT didn't find any splenic lesions or perisplenic hematoma.*

*The patient presented to the emergency room with splenic rupture, 30 days after the initial accident. An emergency total splenectomy was performed without splenic preservation.*

*This case supports the theory that an apparent normal spleen can rupture sometime after trauma.*

*It is very important to be aware of the delayed splenic rupture in patients presenting with hemodynamic instability especially after a motor vehicle accident.*

**Key words:** *delayed splenic rupture, splenic trauma*

### 1. Introduction

The concept of delayed rupture of the spleen was first described in the late XVII century. It is defined as a splenic bleeding that occurs after more than 48 hours after blunt trauma. [1], [4], [11-12], [15]

Schultz and Froelich, in 1985, described a delayed rupture of the spleen after a blunt thoracoabdominal injury 23 days after trauma. [13]

The mechanism of delayed rupture of the spleen is not well understand. There are a few theories: The increase of subcapsular tension or rupture of the perisplenic

hematoma. [5-6], [9-10]

It is very important to differentiate delayed rupture of the spleen from the delayed or misdiagnosis of the spleen lesion. [2-3], [7]

Delayed rupture of the spleen can occur in 1 to 20 % of abdominal injuries and has a high mortality rate.

Kluger proposed a classification for delayed rupture of the spleen. He defined four categories: I. True delayed splenic rupture, without initial evidence of splenic lesions; II. Delayed diagnosis; III. Failure of nonoperative management; IV. Failure of conservative surgery. [8]

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<sup>1</sup> Emergency Clinical County Hospital Brasov

<sup>2</sup> Faculty of Medicine, Transilvania University of Braşov

\* Correspondent author: mircea87@gmail.com

With conservative management of splenic injuries becoming the gold standard of treatment for blunt splenic trauma, it is important to be aware of the potential for delayed rupture of the spleen even after two years following trauma. [2], [14]

## 2. Case presentation

A 33-year-old man was admitted to the Emergency Clinical County Hospital of Brasov for sharp abdominal pain, increased with inspiration.

Thirty days ago, he was involved in a motor vehicle collision and was hospitalized for 25 days in the orthopaedic department with a bilateral ileopubic fracture with displacement. He also suffered a minor head trauma, cervical spine contusion and face lacerations. His ISS was 17 with GCS 15. At that time, the abdominal CT didn't find any splenic

lesions or perisplenic hematoma.

At the present admission, the patient was pale, heart rate 98 bpm, blood pressure 80/55mmHg, mean arterial pressure 63.3 mmHg, with diffuse abdominal tenderness. Laboratory tests showed a decreased haematocrit level of 19%, Red blood cells:  $1.83 \times 10^6$ U/L, haemoglobin level: 6.4 g/dL.

The FAST exam showed a massive hemoperitoneum and because of the hemodynamic instability he was rushed to the operating room.

Emergency median laparotomy was performed. Approximately 2500ml of blood was found in the peritoneal cavity and a large hematoma and fresh blood around the spleen. The spleen presented a capsular tear with active haemorrhage. A total splenectomy was performed. No splenic preservation was attempted.

His postoperative course was uneventful.



Fig.1. *Macroscopic aspect of the traumatized spleen.*

### 3. Discussions

In 1907 Baudet introduced the term “latent period” to describe the time elapsed from the initial splenic injury to the splenic haemorrhage. The latent period of Baudet is at least 48 hours. [6]

This report describes a true delayed splenic rupture (Kluger) occurring 30 days after initial trauma.

In literature, there is a large debate surrounding the delayed rupture of the spleen. [2], [4], [8]

Some authors reported a ruptured spleen two years after the initial abdominal trauma with splenic injury.

In his study, Fabian also reported 4 patients with splenic injuries after blunt abdominal trauma with normal initial CT.

Many theories suggested that at the initial CT there may be a small lesion with minimal or no haemorrhage that is not visible. These injuries may present later as a splenic rupture.

The risk of delayed splenic rupture should be considered in any patient with abdominal trauma.

All patients with hemodynamic instability after trauma should be evaluated for delayed rupture of the spleen.

There are no reliable early or late signs for diagnosis of delayed splenic rupture.

Any patient with left lower rib fracture or left hemidiaphragm elevation after abdominal trauma should be considered as having a splenic injury until it is proven otherwise.

In spite of the 96% sensitivity and 100% specificity of the CT in detecting splenic injuries, there are some cases of spleen rupture in patients with normal CT at admission. [11]

### 4. Conclusions

It is very important to be aware of the delayed splenic rupture in patients presenting with hemodynamic instability especially after a motor vehicle accident.

A normal appearing spleen on initial diagnosis shouldn't rule out a future delayed rupture!

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