

## Case Report: Secondary Rupture of a Splenic Artery Pseudoaneurysm

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### Abstract

### Case Report

The rupture of arterial aneurysm of digestive origin remains a rare pathology in general, but it is always a crisis situation that must be taken care of quickly because the vital prognosis is constantly engaged. It is necessary to be aware of the fact that this pathology requires a rapid therapeutic management with a significant reactivity and that the treatment passes at the same time by the precocity of the recognition of the diagnosis, the speed of initiation of resuscitation maneuvers and finally the repair by surgery. Splenic artery aneurysms are usually asymptomatic, and discovered incidentally on imaging, or by their rupture. The state of hemorrhagic shock is the most frequent mode of revelation (90%), with cardiovascular collapse and inconstantly digestive hemorrhage. The injected abdominal CT scan is the reference examination. It is carried out in search of hemoperitoneum, active bleeding, and in search of the false aneurysm responsible for the bleeding. Surgery, until very recently, was the only therapeutic alternative. Interventional vascular radiology represents a particularly interesting alternative to surgery alone, especially in fragile subjects. It nevertheless remains a delicate technique due to the morphology and the very location of the aneurysms.

**Keywords:** Splenic arterial aneurysm, therapeutic management, Splenic artery aneurysms, hemoperitoneum.

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## INTRODUCTION

Splenic artery aneurysms constitute 60% of digestive artery aneurysms and occur with predilection in the sixth week (up to the 45th day) [1, 2]. They are generally asymptomatic, increasingly diagnosed on imaging [3] or more often, post-mortem [4]. Their rupture is a serious complication that occurs most often in the large peritoneal cavity, less frequently in the digestive tract [5]. This rupture in the digestive tract is a rare etiology of digestive hemorrhage, the diagnosis of which remains difficult [2, 6, 7].

## CASE PRESENTATION

This is a 54-year-old patient, with a history of abdominal trauma one month before his consultation that was not supported. Admitted through the emergency department for a state of hemodynamic shock with excruciating abdominal pain and mucous skin pallor.

The initial clinical examination found skin pallor with tachycardia at 120 BPM, low BP at 70/50, with distention and generalized abdominal defense. The hemoglobin on admission was 6g/dl and an A-grouping.

An emergency abdominal CT angiography showed a large hemoperitoneum with a false aneurysm of the splenic artery next to the tail of the pancreas with active bleeding, and a burst spleen (AAST grade V) measuring 15 cm.

After adequate resuscitation measures, the patient was taken to the operating room.

The exploration objectified a burst spleen seat of an old voluminous hematoma, which is adherent to the neighboring structures.

Release was difficult, but we were able to perform a total splenectomy removing the splenic artery aneurysm.

The patient initially stayed in intensive care, transfused with 6 red blood cells in total, then transferred to our department, then discharged on D5 postoperatively after a satisfactory control hemoglobin.

Vaccination was instituted (anti pneumococcal, anti-meningococcal, anti hemophilus influenzae, anti-influenza) and antibiotic prophylaxis based on peni V a long court, as well as preventive

thromboprophylaxis based on LMWH at a dose of 4000 IU / day and an antiplatelet agent.

The control after one month of the intervention was satisfactory, finding the patient in good general condition. The check-up showed a hemoglobin of 11g/dl.

## DISCUSSION

Splenic artery aneurysms (SAA) are rare but are the most common of digestive artery aneurysms: 15 cases out of a series of 31 Carmeci visceral artery aneurysms [1].

It is a rare pathology but one that is often life-threatening, hence the need for emergency treatment.

A distinction is made between true aneurysms whose etiology is essentially dysplastic, atheromatous, congenital or infectious, and false aneurysms which are distinguished by the interruption of one or more layers of the arterial wall, which increases their fragility and the risk of complications, and aneurysmal rupture and whose etiologies are trauma, pancreatitis, or intra-abdominal infection [4].

It is the a posteriori examination that describes the evolution of the story, with abdominal pain and distension, with the sudden worsening of the symptoms and the occurrence of excruciating pain and in some cases digestive bleeding. This was the case of our patient whose a posteriori examination revealed the history of an abdominal trauma a month before, which was unrecognized and untreated.

Some cases of gastrointestinal bleeding with hematemesis unexplained by successive fibroscopies led to a state of shock and emergency laparoscopic exploration with demonstration of a ruptured splenic arterial aneurysm [8].

The clinical picture is often very serious, dominated by signs of circulatory and respiratory distress.

Among the decision-making parameters to be assessed [9]:

- Filling dependence/systolic hypotension
- persistent.
- In traumatology, the only "stable" patient is a dead patient!
- Anemia (Hb<100g/l)
- 65 years
- Comorbidities (cirrhosis, anticoagulation, alcoholism, insufficiency
- renal, immunosuppression, etc.)
- Associated serious lesions
- Suspicion of digestive perforation

These criteria are most often decisive for emergency surgical management. The biological assessment looks for anemia, ionic disorders and specifies the grouping.

Puncture-washing of the peritoneum (PLP). If its performance in the search for hemoperitoneum is close to 100%, its current interest is moderate in the first hours, since hemoperitoneum alone no longer constitutes an indication for systematic laparotomy.

The radiological assessment is mainly based on ultrasound and CT scan as well as arteriography. Abdominal ultrasound: confirms abdominal effusion even in unstable patients (FAST ECHO). The precise investigation of the spleen is often difficult.

The injected CT scanner: requires stability or at least prior hemodynamic optimization in order to be able to guard against a sudden deterioration in radiology (the availability of recent generation CT, in emergencies themselves, changes the situation with regard to this rule). The scanner establishes a staging of the splenic lesions according to the Moore classification and also looks for other associated lesions such as pancreatic, duodenal, renal or hepatic lesions [9].

In our case, the imaging showed a false aneurysm of the splenic artery which is responsible for active bleeding with a burst spleen grade V of the AAST site of an old voluminous hematoma as well as a hemoperitoneum of great abundance (Figure 1).



**Figure 1:** CT section showing active bleeding at the level of the pseudoaneurysm of the splenic artery sitting at the level of the hilum; 1- Extravasation of the contrast product on the false aneurysm; 2- Chronic intra parenchymal hematoma; 3- hemoperitoneum

When deciding on non-operative treatment after splenic trauma, one must be wary of the risk of secondary rupture of the spleen, which has 2 possible

etiologies: pseudoaneurysms and subcapsular hematomas [10].

The patient who leaves the service must be informed of the risk of RSR and have the possibility of being transported quickly to a hospital center.

- When a subcapsular hematoma has been detected, surveillance in a surgical setting should be prolonged until the image stabilizes.
- Strict bed rest increases the risk of venous thrombosis without evidence of reduced risk of secondary rupture, and is therefore not justified. Patients at high risk of thrombosis can have prevention by LMWH from 48-72 hours after the trauma.
- The systematic practice of an injected CT scan before discharge is all the more indicated if the patient is discharged early and it should become almost systematic for a Moore III grade lesion or higher [10]. Which could have made the diagnosis earlier in our patient after the trauma, something that unfortunately was not done.

Regarding arterial splenic embolization has experienced significant growth in trauma practice in recent years. The indications for angiography and splenic embolization vary according to the teams. Schematically, the conditions under which angiography is discussed are as follows [10]:

- Extravasation of contrast product on CT scan in a relatively stable patient;
- High risk of decompensation in a stable patient showing no signs of active bleeding, mainly from pseudoaneurysms or arteriovenous fistula;
- Moore III-V impairment and abundant haemoperitoneum;
- Distilling haemorrhage and need for transfusion;
- Need for emergency orthopedic or neurosurgical intervention.

If there is a consensus on the first two indications, the last three are debatable and must be the subject of a medical consensus [10].

In our case, arterial embolization was not available, hence the decision to perform immediate surgical treatment.

The reference surgical treatment is total splenectomy with ligation of the splenic pedicle and evacuation of the peritoneal hematoma given the risk of superinfection of the latter.

The main postoperative complication after splenectomy is pancreatic fistula, hence the interest of doing a lipase/amylase assay in the peritoneal fluid in case of doubt. [10]

The surgical technique most often follows these steps:

- Incision: wide median, sometimes elective left subcostal.
- Total release of the spleen by detachment of the post midgut (section
- Phrenic attachments, ligament sustentaculum lienis, gastro-splenic omentum with its course vessels and splenorenal ligament). then exteriorization through the incision (for non-traumatic repair.)
- Ligation of the splenic vessels followed by splenectomy.
- Evacuation of hemoperitoneum + lesion assessment

Our surgical intervention consisted of an initial release of the splenic attachments, then an anterior dislocation of the spleen helped us to expose the splenic pedicle for its ligation and to ensure hemostasis, total splenectomy was performed (Figure 2) and a drain was placed removed after 3 days.



**Figure 2: Pièce de splénectomie; 1- Chronic intraparenchymatous hematitis**

Intraoperative and postoperative transfusion was necessary with filling and the use of low-dose vasoactive drugs on the first postoperative day.

A biological control before the exit of the patient was made showed a hemoglobin has 9g/dl.

After total splenectomy The risk of thrombosis justifies appropriate anticoagulant prophylaxis in all patients at risk (age, history, bed rest) by compression of the lower limbs and low molecular weight heparin (LMWH) at a dose that complies with standards. Splenectomized patients should have postoperative platelet counts. Those with thrombocytosis should have platelets measured twice a week. When the platelet count is greater than 650 G/l, an HPBM type Lovenox® 40 can be prescribed and low-dose aspirin can be added if the count reaches 1000 G/l. thing that was done in our case [10].

Patients who have had a splenectomy must be vaccinated against pneumococcus, influenza, meningococcus and Haemophilus (the latter two concern patients under 30). They must also have antibiotic prophylaxis with penicillin V for two years after the intervention and above all benefit from therapeutic education including all the preventive and curative measures vis-à-vis the lifelong risk of infection linked to asplenia. These vaccines were administered to our patient.

Conservative surgical treatments such as partial splenectomy, placement of biological tampons and glues are less and less used and not very effective [10].

## CONCLUSION

The spleen is the organ most frequently affected in cases of abdominal trauma. In the presence of haemodynamic failure, splenectomy remains the simplest procedure that will save the patient's life. The possibilities of surgical preservation of the spleen, essentially by perisplenic mesh, are rare, but useful to know in the event of splenic involvement in young subjects or accidental splenic lesion during another surgery. The risk of postoperative thrombocytosis and venous thrombosis justifies close monitoring of the platelet count and a thrombosis assessment in the event of suspected thromboembolic accident. Due to the risk of fulminant infections that can occur throughout their life, the splenectomized patient must follow antibiotic prophylaxis, be vaccinated regularly and above all benefit from therapeutic education in order to react quickly and correctly in the event of a febrile syndrome.

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