

Postpartum splenic rupture: a possible iatrogenic event, but finalized with successful conservation of the spleen

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Summary

The authors present the case of a postpartum splenic rupture induced probably by iatrogenic injury (recent vaginal delivery with a prolonged expulsion with uterine fundus compression) including the left hypochondria region costal grid. The case was solved with splenic preservation and achieving hemostasis only by local plugging and Gelaspon. The case raised also other problems regarding the etiology of splenic rupture, in establishing a causal relationship between an intrapartum splenic injury, and the three episodes of inferior genital tract hemorrhaging, in establishing the cause of the infectious syndrome from the 24th postpartum day, (parietal infection or splenic abscess requiring splenectomy).

Key words: Postpartum splenic rupture; Iatrogenic complication; Ruptured spleen preservation.

Introduction

Intra- or postpartum splenic rupture is a rare event usually not immediately recognized and solved, but it represents an extreme surgical emergency with consequences on the vital maternal and fetal prognosis.

The authors present a case of a postpartum splenic rupture that they presumed to be induced by obstetrical trauma at vaginal birth: prolonged expulsion with uterine fundus and costal grid compression.

Case Report

A 23-year-old patient, nullipara, accomplished a vaginal delivery in a second level obstetrical unit, resulting in a live newborn of 3,550 grams. She was discharged three days post-delivery, without clinical problems. The 7th day post delivery, she returned with significant vaginal bleeding. After instrumental uterine revision, oxytocics, prostaglandins, correction of volemia, and coagulation, the patient was discharged again. On the 14th day postpartum, she returned with another episode of vaginal bleeding, and a subtotal inter-adnexal hysterectomy was performed in order to achieve complete hemostasis. The pathology result was: acute postpartum metritis. On the 21st day postpartum, she returned with significant repeated vaginal bleeding. The patient was transferred in the present tertiary obstetrical unit. Here, the authors performed a totalisation of the hysterectomy and bilateral hypogastric artery ligation. Surgical hemostasis was achieved, and a Douglas drain was installed. During the first 12 hours, the patient's condition was stable, but immediately after, the patient was mobilized, her general condition deteriorated, with signs of hemorrhagic shock, and drainage through the Douglas tube that increased up to 500 ml of bloody fluid in one hour. Re-intervention was decided upon to verify the hemostasis. The vaginal stump

Table 1. — *Laboratory exams at admittance in the tertiary unit maternity.*

Parameter	Value	Reference range
Hemoglobin	9.8 g/L	13.5-18 g/L
Hematocrit	29.6%	32-48
Platelet count	494x10 ³	100- 450x10 ³),
APTT	54.6/sec	25-43/sec
Fibrinogen	225 mg/dL	200-400 mg/dL
PDW	16.9%	10-15%

APTT: activated partial thromboplastine time; PDW: platelet distribution width.

was normal; persistent bleeding was originating from the right upper quadrant of the abdomen. The general surgeon was called and found a one-cm superficial capsular laceration, two cm above the splenic pedicle. He decided that bleeding could be stopped by local pressure and Gelaspon, and opted for splenic preservation, Douglas drainage, and left and right hypochondria drainage. Four units of blood and eight units of fresh frozen plasma were given during these last two operations. An abdominal ultrasound performed after the discovery of splenic rupture, indicated the presence of a splenic hematoma of 73.05 cm³ volume, but it remained stable during serial ultrasound evaluations.

Postoperatively, the evolution was hemodynamically stable, but a parietal infection with *E. coli* was diagnosed, resulting in a differential diagnosis of a splenic hematoma becoming infected in a splenic abscess. The surgeon decided again to preserve the spleen, and after 14 days of poli-antibiotherapy, the infectious symptomatology disappeared.

Laboratory values at patient admission in the present hospital were significant for: anaemia, thrombocytosis, increased APTT, and increased PDW (see Table 1). The patient returned three months later and her clinical status was normal.

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Discussion

The etiology of a splenic rupture is frequently unclear. Most post-partum splenic ruptures are produced by the rupture of an aneurysm of the splenic artery [1-3], but in the present case, the vascular pedicle of the spleen was intact.

Ultrasound examination in the present case described a heterogeneous collection of 66×45×31.7 mm (73.05 cm³ volume) near the hilum, with hypoechoic areas, suggestive of hematoma. The authors could not identify at colour and spectral Doppler sonography, a transonic pulsatile structure with turbulent arterial flow, in contact with the hematoma, to sustain the hypothesis of intrasplenic arterial true aneurysm or pseudo-aneurysm rupture. Unfortunately, a limitation of this case was the impossibility of performing an abdomino-pelvic CT, MRI or angiography immediately after surgery or later.

The patient denied any abdominal trauma caused by an involuntary fall or family violence, but she declared during her recent delivery, a prolonged expulsion with uterine fundus compression, including compression in the left hypochondria region costal grid. No systemic disease that could affect the spleen was identified.

Cheung *et al.* [4] described a case of splenic rupture four days after a cesarean delivery in a patient who was on anticoagulation treatment with Warfarin. The bleeding was controlled by argon beam coagulation and tachocomb. There are two other published cases of splenic rupture after low molecular weight heparin taken during the third trimester of pregnancy; both cases resolved with splenectomy [5, 6]. In the present case, after the subtotal hysterectomy, the patient received a prophylactic dose of low molecular weight heparin, but she interrupted it two days before the next episode of hemorrhaging.

Another possible cause of rupture of the spleen discussed was a possible direct trauma of the spleen caused by the application of abdominal retractors at the moment of hysterectomy totalisation and hypogastric artery ligation. However retractors were protected with swabs, and the authors believe that the pubo-subumbilical incision did not allow the retractor to arrive in direct contact with the spleen.

The second issue raised by the case was the decision to preserve the spleen versus performing an emergency splenectomy. The surgeon opted for splenic conservation, because the patient was young, the bleeding was controlled only by local compression and hemostatic Gelaspon, she became hemodynamically stable immediately after bleeding cessation, there was no other intra-abdominal lesion, and she needed only four units of blood for intra- and post-operative transfusion.

The third problem raised by the case was the existence of a parietal infection with *E. coli*, clinically manifested with

septic syndrome, imposing a differential diagnosis of over-infected splenic hematoma, which would have required splenectomy. The patient received antibiotics according to the antibiogram of the abdominal wound and septic symptoms resolved.

The fourth question about the case is whether the bleeding could have been amplified by platelet changes secondary to the splenic trauma, because the authors considered that the main etiology was genital infection (acute post partum metritis), coupled with the use of heparin. The authors do not have sufficient arguments to sustain or to reject this hypothesis, because the patient presented all the time a higher than normal number of platelets due to the genital infection and they did not perform a peripheral blood smear.

Conclusion

The authors consider the presentation of this case useful, because, to their knowledge, it is the first case of postpartum splenic rupture resolved with splenic preservation and achieving hemostasis only by local plugging and Gelaspon. The case raised also other problems regarding the etiology of splenic rupture, in establishing a causal relationship between an intrapartum splenic injury and the three episodes of inferior genital tract hemorrhaging, in establishing the cause of the infectious syndrome from the 24th postpartum day, (parietal infection or splenic abscess requiring splenectomy).

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