

## SPONTANEOUS SPLENIC RUPTURE AFTER APPENDECTOMY: CASE REPORT OF AN EXTREMELY RARE ENTITY

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### ABSTRACT

Spontaneous rupture of the spleen is extremely rare. Rupture of the spleen in the absence of trauma or previously diagnosed disease is commonly ignored by emergency physicians and is often not documented as such in emergency literature or in journals from other fields. Systematic review of English and French language publications catalogued in Pubmed, Embase and CINAHL between 1950 and 2011 done by F Kris Aubrey-Bassler and Nicholas Sowers showed 112 cases of splenic rupture following medical procedures, out of that only one case is secondary to abdominal surgery. In the view of high overall mortality rate (10-15%) following splenic rupture early diagnosis is crucial. We present a case of splenic rupture in a 57 year old female following two weeks of appendectomy. To best of our knowledge this is first case of spontaneous splenic rupture after appendectomy.

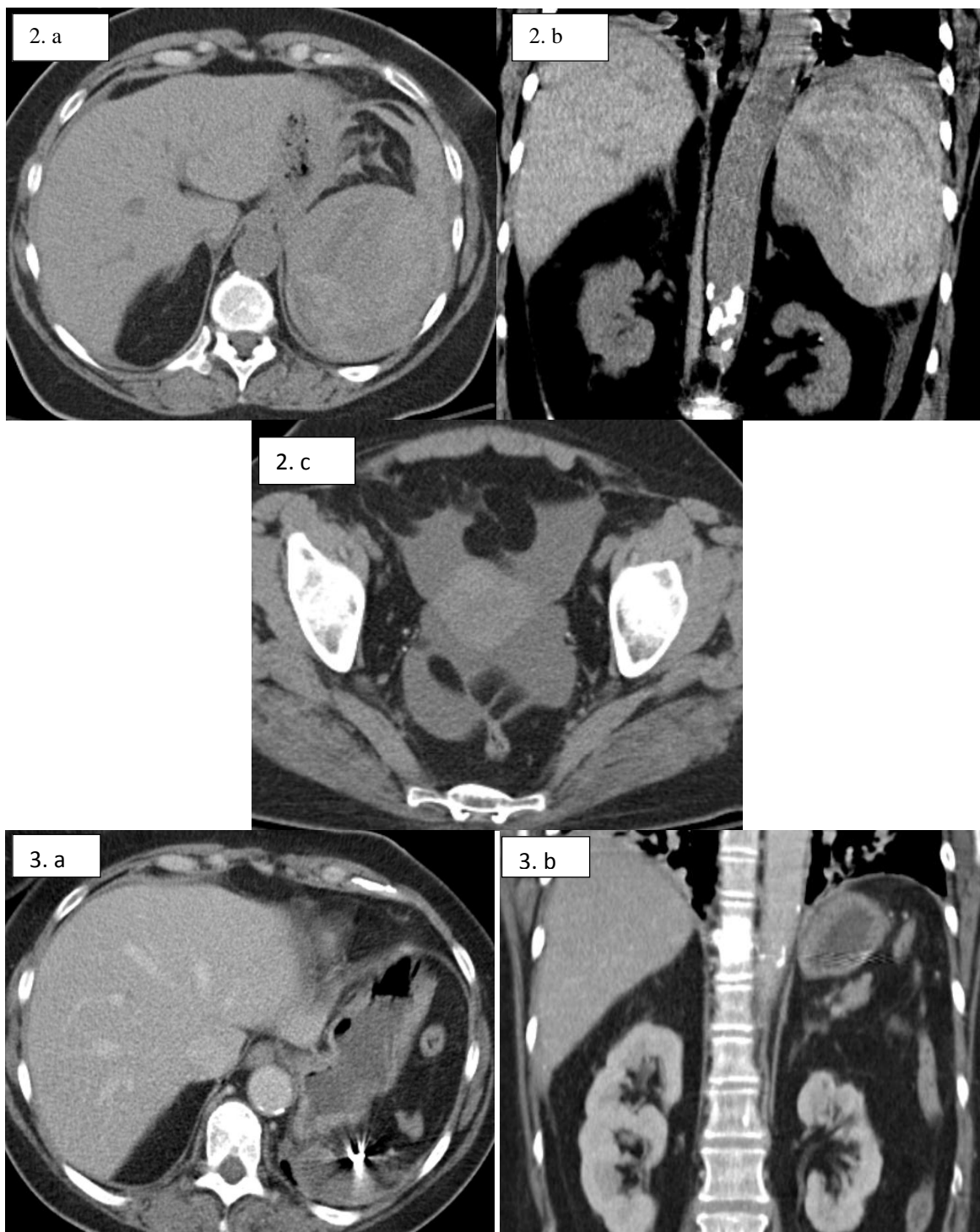
**KEYWORDS:** Rupture, Spleen, Mortality

### CASE REPORT

We report a case of 57 year old female who presented with left upper quadrant pain radiating to left shoulder and neck after two weeks of appendectomy. On physical examination she was sweaty and pale with the following vital signs: blood pressure 110/72 mmHg, heart rate 112 beats per minute, respiratory frequency 32 to 34 per minute, temperature 37 degrees Celsius. On palpation there was abdominal tenderness in the left upper quadrant without rebound tenderness.

On admission, a noncontrast computed tomography (CT) of abdomen and pelvis was performed. The CT study shows a large hematoma in spleen with disruption and enlargement of the splenic contour and a small subdiaphragmatic collection (image). Small to moderate hemoperitoneum is also present. Contrast enhanced CT done before surgery showed inflamed appendix and a normal spleen (image). Patients underwent splenectomy due to hemodynamic instability. On histopathological examination spleen was normal.





**DISCUSSION**

Spontaneous rupture of the spleen is extremely rare.<sup>[1-4]</sup> NSR may occur in 0.1%-0.5% of patients with no associated trauma.<sup>[5]</sup> The first cases of spontaneous splenic rupture were reported by Rokitansky<sup>[6]</sup> in 1861 and Atkinson<sup>[7]</sup> in 1874. According to Orloff and Peksin<sup>[8]</sup>, a small group of cases exist, in which the only justifiable conclusion is that the spleen ruptures spontaneously without known cause. They identified four criteria for the diagnosis of spontaneous splenic rupture: (1) on thorough questioning, either prior to operation or

in retrospect after operation, there should be no history of trauma or unusual activity that could conceivably injure the spleen; (2) there should be no evidence of disease in other organs that are known to affect the spleen adversely and thereby could cause it to rupture; (3) there should be no evidence of perisplenic adhesions or scarring of the spleen that suggests it has been traumatized or ruptured previously; (4) without findings of hemorrhage and rupture, the spleen should be normal on both gross inspection and histological examination. Crate and Payne added a fifth criterion that is full virological studies of the acute phase should show no

significant rise in viral antibody titers suggesting recent viral infection of the type associated with splenic involvement.<sup>[9]</sup> The patient, who was accepted with spontaneous splenic rupture, had these five criteria. The pathophysiology of spontaneous splenic rupture is obscure. It should be considered that undetected structural abnormalities in spleen may cause nontraumatic splenic rupture. When a spleen is ruptured spontaneously and not due to trauma a wide range of conditions including viral infections has been reported to be responsible. These conditions can be divided in five groups: hematological, metabolic, iatrogenic, infective and other. 93% of spontaneous ruptures are associated with histopathologically altered spleens.<sup>[10]</sup> The most common symptom is left upper quadrant abdominal pain. Signs that are suggestive of splenic rupture are Kehr's sign (left diaphragmatic irritation resulting in referred pain to the left shoulder) and Balance's sign (palpable tender mass in the left upper quadrant).<sup>[11]</sup> This pain can become generalized, with distension, tenderness and rigidity in later stages. The abdominal symptoms may be accompanied by pallor, tachycardia, hypotension and oliguria. Eventually, more than half of patients will suffer hemorrhagic shock if the condition is left untreated.<sup>[3,13]</sup> Overall mortality rate is 10-15% following splenic rupture.<sup>[10]</sup> Abdominal ultrasound is an inexpensive and practical way to obtain a quick diagnosis of intraperitoneal fluid accumulation or hematoma, which can be performed at the patient's bedside or in the emergency unit.<sup>[4]</sup> CT signs of spontaneous rupture of spleen may be useful for predicting rupture, and it clearly shows the splenic damage severity and intraperitoneal free fluid.<sup>[1]</sup> We believe that abdominal ultrasound would be a good, non-invasive technique for the patients who are hemodynamically unstable, whereas CT can be used for patients who are hemodynamically stable. The management of spontaneous or pathological splenic hemorrhage has been debated constantly. Aggressive management with early surgical intervention is a key to successful outcome.<sup>[13]</sup> As an alternative to surgery transcatheter arterial embolization can be done provided patient is responsive to initial fluid resuscitation.<sup>[14,15]</sup> There are few reports which suggest that spleen function remains even after embolization of main splenic artery due to collateral circulation.<sup>[16,17]</sup> Post-splenectomy sepsis occurs in approximately 3.2% patients and is a potentially lethal complication with high mortality rate of 40-50%, hence splenic tissue should be preserved if possible.<sup>[18]</sup> Another possibility is conservative approach for splenic rupture and is a good option if patient is stable. In a recent report Stephenson and DuBois conclude that patients are considered suitable for the conservative approach when patients require less than 4 units or 40 ml/kg of blood for resuscitation.<sup>[19]</sup>

## CONCLUSION

We can say that spontaneous rupture of spleen is a rare entity that needs a high index of suspicion for diagnosis. Early diagnosis, aggressive resuscitation, and surgical

intervention can lead to a successful outcome in these patients. We believe that increased awareness of these phenomena will improve the ability of emergency physicians to diagnose similar cases of splenic rupture in a timely fashion.

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