

**CASE REPORT****POST HYSTERECTOMY SPONTANEOUS RUPTURE OF SPLEEN****Zahid M Bahli, Kathy Kennedy**

Department of Surgery, Altnagelvin Area Hospital, Londonderry, UK

Spontaneous rupture of spleen is a rare entity in the world of obstetrics and gynaecology. The obstetricians-gynaecologist has to confront with ruptured spleen sometimes in their practice. Ruptured spleen is not uncommon in trauma and some surgical procedures in upper abdomen. Splenic rupture after hysterectomy is exceedingly rare occurrence. However it should be considered as part of diagnostic workup in any unstable post hysterectomy subject with high degree of suspicion along with other differential diagnosis. Early reorganisation of this potentially life-threatening complication is very important for the wellbeing of patient and carries medico legal significance as well. We are reporting fourth case of spontaneous rupture spleen after abdominal hysterectomy found in the literature along with literature review and update on the topic regarding its diagnostic criteria.

**Keywords:** Spontaneous rupture, rupture, spleen, complications, hysterectomy, post hysterectomy

**CASE SUMMARY**

A 39-year-old female was admitted to the gynaecological unit electively for a total abdominal hysterectomy. The indication for this was severe menorrhagia, which failed to resolve despite numerous endoscopic balloon ablations. Past medical history included depression, mild asthma and thyroid goitre. She smoked five cigarettes per day. Systematic questioning and examination were entirely normal as were preadmission bloods.

The following day she underwent total abdominal hysterectomy with ovarian preservation via a Pfannenstiel incision. The surgery was successful and the patient spent a short period of time in recovery before returning to the ward. On the first postoperative day she had no complaints and was comfortable and afebrile. Day two post operatively she began to complain of generalised abdominal pain with mild diffuse tenderness. Furthermore her bowels had not opened for three days. An abdominal film showed faecal loading. An inflammatory response was noted in her bloods; White Cell Count (WCC) 19.7 and C-reactive protein (CRP) 240. She remained afebrile and haemodynamically stable and was administered a mild laxative. On the third postoperative day the abdominal pain increased in severity and was associated with left shoulder tip pain. On examination mild diffuse tenderness was noted and she became tachycardia at 133 beats per minute (bpm) and hypotensive at 91/59 mmHg.

Investigations revealed haemoglobin of 7.0 g/dl. She received two units of packed red cells however haemoglobin rose to just 7.9 g/dl. A Transvaginal Ultrasound Scan (TVUSS) demonstrated a collection of fluid 2.6 by 4.0 centimetres (cm). Review by the consultant gynaecologist led to the patient having an exploratory

laparotomy via the original Pfannenstiel incision. A small venous bleeder at the right ovarian pedicle was identified and ligated as possible source of bleeding. One and a half litres of blood was found in the abdomen. Postoperatively the patient was transferred to High Dependency Unit (HDU) on Metronidazole, Cefuroxime and Gentamicin. Seven units of packed red cells were transfused. Tachycardia and hypotension persisted; systolic blood pressure remained 80mmHg and pulse rate fluctuated between 130 and 140 bpm.

CT abdomen revealed a ruptured spleen and perisplenic haematoma with free intraperitoneal fluid (Figure-1-3).



**Figure-1: CT Scan showing blood collection in upper abdomen**



**Figure-2: CT Scan showing splenic rupture**



**Figure-3: CT scan showing large upper abdomen haematoma**

She was assessed by the surgical team on call and taken to theatre for emergency laparotomy via a midline incision. The ruptured spleen was located and removed and two tube drains inserted. Post operatively she was transferred back to HDU and received 11 units of packed red cells in total. Her recovery was successful and haemoglobin rose gradually. Haemophilus influenza Type B, Pneumococcal and Meningococcal vaccinations were administered. After four days in HDU she was transferred back to the ward.

Investigations were conducted in order to ascertain any pre-existing condition, which may have led to splenic rupture including detailed history of any trauma. In addition to normal histological examination of the spleen serology and virology screens were also normal.

**DISCUSSION**

To our knowledge spontaneous rupture of spleen following abdominal hysterectomy is so rare that we could only find three reported cases in literature. Only one case has been reported in English literature.<sup>1</sup> Our literature search revealed that one case has been reported in Polish<sup>2</sup> and one in German language<sup>3</sup>.

The spleen weighing about 75–150 g is a highly vascular organ that filters an estimated 10.15% blood volume every minute. The spleen may hold 40-50ml of red cells in reserve on average, however with changes in its internal smooth muscles it can pool significantly more blood.<sup>4</sup>

Rupture of spleen is an intra abdominal catastrophe, which usually is fatal if untreated, but if diagnosed in time, blood replacement and splenectomy provides a better prognosis<sup>1</sup>.

Atkinson first reported spontaneous rupture of normal spleen in the literature and since then this diagnosis is subject of debate and continuous evolution<sup>5</sup>. Most of the literature related to spontaneous rupture of spleen, we found was in the form of case reports. We can simply classify rupture spleen with following simple categories:

- 1-Traumatic
- 2-Spontaneous
  - a-Pathological spleen
  - b-Normal spleen

Table-1 gives a brief description of the causes of spontaneous rupture of spleen.

Interestingly spontaneous rupture of the spleen has been reported in following procedures as well:

- Colonoscopy
- Electroconvulsive therapy
- Implantation of automatic defibrillators
- Shock-wave-lithotripsy
- Transoesophageal echocardiograph
- ERCP (endoscopic retrograde cholangiopancreatography).

Wehbe, Raffi and Osborne<sup>6</sup> describe following theories for he spontaneous rupture of the spleen:

- 1-Localized involvement of spleen with a pathological process, which upon ruptures all evidence of pathological change is destroyed.
- 2-Reflex spasm of splenic vein causing acute splenic congestion.
- 3-Portal venous congestion with chronic splenic congestion.
- 4-Abnormally mobile spleen that undergoes recurrent torsions and resultant congestion leads to rupture.
- 5-Rupture of degenerative or aneurysmal splenic artery.
- 6-Forgotten or unnoticed trauma.
- 7-Sudden increase in intrabdominal pressure leads to rupture (i.e., heavy meal, defecation, lifting, coughing, vomiting etc.

**Table-1: Causes of spontaneous rupture of pathological spleen**

Spontaneous Splenic Rupture of Pathological Spleen	Haematological causes	Gastrointestinal causes	Infiltrative causes
Infectious Mononucleosis Viral Hepatitis SBE TB Syphilis Malaria	Haemophilia Anticoagulation Haemolytic Anaemia Lymphoma Leukaemia Multiple Myeloma	Crohn's disease Pancreatitis	Amyloidosis Felty's syndrome Gaucher's disease Sarcoidosis Metastatic carcinoma

Orloff and Peskin<sup>7</sup> extensively studied the spontaneous rupture of spleen and has formulated following criteria for establishment of this rare diagnosis in clinical scenarios:

- 1-On thorough questioning there should either prior to the surgery or after surgery, there should be no history of trauma or unusual physical effort that conceivably could injure the spleen.
- 2-There should be no evidence of organ disease other than the spleen that is known to affect the spleen adversely, thereby causing it to rupture.
- 3-There should be no evidence of peri-splenic adhesions or scarring of the spleen, suggesting that spleen has been traumatised or ruptured previously.
- 4-Apart from haemorrhage and rupture spleen should be normal on macroscopic and microscopic examinations.

According to Crate and Payne<sup>8</sup>, a fifth criterion should be negative full virology screen in acute or convalescent phase. A rising antibody titre will suggest viral involvement of spleen, which can cause splenic rupture.

Farhi and Ashfaq in their study found that histologically non-traumatic ruptured spleens did not show marginal zone hyperplasia or germinal centre proliferation as compared to traumatic ruptures of spleen<sup>9</sup>.

It is interesting to know that spontaneous splenic rupture is two times more common in men than in women and median age of presentations 42 years (2-81 years), one third of the patients present with hypovolemic shock and 8% die before reaching the hospita<sup>10</sup>.

Two most important signs which can help in establishing clinical diagnosis are Kehr's sign (left diaphragmatic irritation resulting in referred pain to left shoulder) and Balance's sign (palpable tender mass in left upper quadrant<sup>6</sup>). Myocardial infarction, pulmonary embolism, ruptured ectopic pregnancy and other causes of acute abdomen are important differential diagnoses<sup>11</sup>.

Radiological investigations play a major role in the diagnosis of splenic rupture. Ct scan has at least 95% sensitivity and specificity for the diagnosis of splenic rupture<sup>12</sup>. Diagnostic peritoneal lavage (DPL), and focused abdominal sonographic technique (FAST) are also very important modalities

in emergency situation especially in Emergency departments.

Treatment of spontaneous rupture of spleen depends upon the overall clinical picture and haemodynamic status of the patients. Surgical intervention based upon splenectomy is reserved for the patients with serious hemoperitoneum, and refractory hypovolemic shock.

Postoperatively patients should be evaluated for immunisation status against *Pneumococcus* species. Some centres routinely vaccinate against *H Influenza* and *Meningococcal* species as well. Vaccination should be administered from 24 hours to two weeks postoperatively due to improved physiological response of body to vaccination in this time period<sup>4</sup>. CDC recommends only one revaccination dose against *Pneumococcal* species after 4-5 years. However patient has to be warned against increased risk of postsplenectomy sepsis and life long antibiotic prophylaxis for invasive medical and dental procedures.

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## Address for Correspondence:

**Dr. Zahid M Bahli**, Trust Assistant Surgeon (General Surgery), Ward 32/31, Altnagelvin Area Hospital, Londonderry, BT47 6SB, Northern Ireland, UK. **Tel:** +44-28-71345171/Ext: 5526, 5527  
**Email:** zbahli@gmail.com