and a rate of less than 90 shocks per minute. The patient’s past medical history was significant for chronic obstructive pulmonary disease, peptic ulcer disease and diverticulitis. She had undergone multiple surgeries in the past, including an appendectomy, oophorectomy and left breast lumpectomy, with no reported coagulopathy. Following the procedure, the patient complained of acute chest and right shoulder pain. A myocardial infarction was considered and an electrocardiogram, a creatine kinase muscle–brain isoenzyme (CK2 [MB]) level and serial troponins were obtained, all of which were negative. The patient remained hemodynamically stable but continued to have severe and persistent right side abdominal pain with right upper quadrant tenderness to palpation. This finding led us to obtain a CT scan of her abdomen and pelvis. The CT scan showed a 13 × 6–cm subcapsular hepatic hematoma, compressing the right lobe (Fig. 1). The patient was managed conservatively with observation and serial hematocrits. Over the 48 hours that followed, the patient’s hematocrit dropped from 0.40 to 0.26, transaminases and her total bilirubin rose; the patient continued to have persistent abdominal pain. The patient’s aspartate aminotransferase and alanine aminotransferase reached a peak of 493 U/L and 750 U/L, respectively. Her total bilirubin rose to 37.62 μmol/L. A repeat CT scan at 48 hours showed expansion of the hematoma with compression of the intrahepatic vessels and newly visualized thrombus within the right hepatic vein leading into the inferior vena cava (Fig. 2). The patient was evaluated by the liver surgery team and she consented to a laparoscopic evacuation of the hematoma. A hand-assisted laparoscopic approach was used, with a 12-mm umbilical camera port, a 5-mm right upper quadrant working port and a 12-mm umbilical camera port, a 5-mm right upper quadrant working port.
port and a 7-cm right subcostal incision for the hand port. Initial evaluation of the abdomen revealed a significant number of adhesions from the capsule of the liver to the abdominal side wall. We believe that tearing of these adhesions during ESWL caused the subcapsular hematoma. A capsulotomy was made using a suction irrigator under the guidance of hand control and 900 mL of liquid hematoma was evacuated. The rest of the hematoma was evacuated with blunt extension of the capsular incision. Although no active bleeding was seen, argon beam coagulation was used on the surface of the liver to ensure hemostasis. A postoperative CT scan showed marked improvement of the subcapsular hepatic hematoma, with improved hepatic vein filling (Fig. 3). A small amount of residual thrombus was visualized in the right hepatic vein. Following liver decompression, the patient’s serial transaminases and total bilirubin trended toward normal and her hematocrit remained stable. The patient reported resolution of her abdominal pain.

**Commentary**

Subcapsular hepatic hematoma is a rare complication of ESWL. Only 4 cases have been reported in the literature, and to our knowledge, no cases that resulted in hepatic vein thrombosis have been reported. Moreover, no cases, to our knowledge, have been described in the third generation lithotripters. All of the reported cases were managed either with percutaneous drainage or watchful waiting. Our decision for surgical intervention was influenced by the patient’s persistent pain, expansion of the hematoma, worsening liver function and hepatic vein thrombosis. A hand-assisted laparoscopic approach was successful in decompression of the hepatic hematoma with subsequent resolution of elevated transaminases, total bilirubin and pain. Hypertension, age, coagulopathy and use of anticoagulant medication have been identified as independent risk factors for the development of perinephric or subcapsular renal hematomas following ESWL. Our patient did not have a pre-existing history of hypertension or known liver pathology or coagulopathy. She denied any use of anticoagulant medications. The
hepatic adhesions noted at the time of surgery were thought to be responsible for a capsular tear during ESWL, leading to the formation of a hematoma. Subcapsular hepatic hematoma is a rare complication following ESWL, and this is the only reported case involving hepatic vein thrombosis. A CT scan of the abdomen to rule out hemorrhage is recommended when persistent unexplained pain occurs following ESWL. In most cases, conservative management, including watchful waiting or percutaneous drainage of the collection, can be used.\(^6\)\(^{-}\) However, more complicated cases that affect liver function may require surgical intervention.

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