Case Report
A 42-year-old woman was admitted to the ICU department with sepsis and respiratory failure after a percutaneous drainage of a large retroperitoneal abscess. Her medical history revealed recurrent nephrolithiasis and subsequent urinary tract infections. She had undergone ureterorenoscopy and multiple ESWL sessions in the past. The patient had smoked for 42 pack years.

Two months before admission she again suffered from symptomatic nephrolithiasis. Ultrasound showed a distended right pyelo-caliceal system and proximal ureteral stones (max 2.8cm). An indwelling ureteral stent was placed during ureterorenoscopy. She then underwent an ESWL (2500 shocks, 14-18kV) under general anaesthesia. Her current medication was diclophenac 50 mg 3/D, butylscopolamine bromide 20 mg 3/D and co-trimoxazol 960 mg 2/D for a urine culture positive for Proteus mirabilis. Subsequently the patient noticed that her abdomen became progressively more painful and distended over the next few days. CT imaging showed a perirenal haematoma (12x4.6x13.5cm) and a subcapsular liver haematoma (6x3.5x9cm), (Figure 1). The patient became haemodynamically unstable, the haemoglobin dropped to 3.7 mmol/L. A repeat CT scan showed enlargement of the haematoma with signs of active bleeding from a distal branch of the right renal artery. Despite aggressive fluid resuscitation she remained hypotensive. She was successfully treated with selective angiographic embolization. Ultrasound follow up showed the size of the retroperitoneal haematoma to be stable. She was discharged on day 13.

Thirty days after discharge, the patient developed fever. Initial physical examination showed a haemodynamically stable patient with a temperature of 38.7 degrees, a distended abdomen with infiltration and crepitations of the right flank. Laboratory results showed a concentration of C-reactive protein of 320 mg/L, a serum creatinine of 130 umol/L, leukocytes were 24.9 x10^9/L, the

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lactate concentration was 6.8 mmol/L. During ultrasound imaging the presence of gas within the haematoma was noticed and confirmed with CT imaging which showed a large retroperitoneal abscess (11x8x21 cm), together with a dislocated ureteral stone (Figure 2 and 3). The abscess was drained percutaneously but hours later the patient developed respiratory failure and septic shock. She was admitted to ICU with a respiratory rate of 60 per minute, a heart rate of 180 beats per minute and a blood pressure of 120/60 mmHg. She was resuscitated, intubated and mechanically ventilated and antibiotics were given. The culture of the abscess material yielded multiple anaerobic bacteria species not further specified. Antibiotic therapy was directed towards anaerobes, metronidazole 500 mg 3/D i.v. was started and a lumbotomy was performed to definitively drain the abscess around which the sepsis resolved. She was discharged from ICU five days after surgery.

Discussion
ESWL is the preferred method of managing renal and proximal/mid ureteral calculi [2]. The reported occurrence of post ESWL haematomas varies depending on the modality used for follow-up. In the early days with CT or MRI follow-up, up to 20% of patients had a subcapsular or perirenal haematoma [3, 4]. Today, with improvement of the procedure and ESWL technology, less than 4% develop any form of haematoma when screened with ultrasound [5]. Overall, less than 1% of all haematomas are of clinical significance [6]. Subcapsular liver haematoma has been described only five times. Risk factors for bleeding complications are hypertension, increasing age, coagulopathy and the use of anticoagulant medication such as non-steroidal anti-inflammatory drugs [7]. In a review by Maker, the presence of ESWL-related gastrointestinal injury was estimated to be around 1.8% and the damage was proportional to the number of shocks given [8]. ESWL in combination with local tissue damage gives rise to bacteraemia in approximately 4% of patients [9]. Progression into severe sepsis and septic shock is seldom seen, possibly because of prophylactic antimicrobial therapy [10]. The risk of sepsis increases if a urine culture is positive before ESWL or in the presence of urinary obstruction [11]. Infections with anaerobic bacteria have been described in many different types of urinary tract infection and can lead to abscess formation [12]. Development of sepsis and respiratory failure originating from a retroperitoneal abscess is a rare late complication of ESWL.

Conclusion
ESWL is an effective method of treating renal calculi. Although the procedure is considered to be a safe one, our case demonstrates that life-threatening complications, both early after the intervention and also at a later date, can occur.

Figure 2. The liver haematoma has almost been resolved. Gas can be seen inside the retroperitoneal haematoma. The abscess has infiltrated the entire right flank.
Respiratory failure and septic shock after a secondarily infected retroperitoneal haematoma: a late life-threatening complication of extracorporeal shock wave lithotripsy

References