



## The Silent Sentinel: Splenic Injury Following Trivial Trauma Presenting As Shoulder Pain – A Case Series

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### ABSTRACT

A 55 year-old male presented to ED with complaints of left shoulder pain for one day, following a trivial fall that occurred four days prior. At presentation his vitals were within normal limits and on detailed examination he had minimal left upper quadrant pain on palpation along with left shoulder pain. In view of the history of fall, we performed an E-FAST examination, which revealed suprapubic fluid. A CECT was performed for suspected splenic injury, which showed a grade V splenic injury. The second case was a young male who sustained a skid and fall from a bicycle, presenting to ED within 5 hours of the injury, with complaints of left shoulder pain. His vital were stable at presentation and he was clinically suspected to have an acromion process fracture, and in light of the fall, we performed an E-FAST examination, which revealed free fluid in Morrison pouch. A CECT of the abdomen showed a grade III splenic injury.

The shoulder pain in both cases was referred pain, and emergency physicians should have a high suspicion to identify life threatening splenic injuries.

### I. INTRODUCTION

All abdominal structures are at risk, in blunt trauma and the mechanism of traumatic force determines which organs are affected. Spleen injuries are one of the most frequent trauma-related injuries. Pain and blood loss are the two main reason for production of symptoms and signs in spleen injury patients. Additionally, traumatic rupture can present immediately after an injury or may present in a delayed fashion[1]. The lack of substantial trauma does not exclude the possibility of splenic injury[2] and sometimes patients may present with isolated left shoulder pain. Eliciting a history of trivial trauma in delayed onset shoulder joint pain following a splenic injury is challenging. Following injury to spleen, majority of patients may present in emergency department with

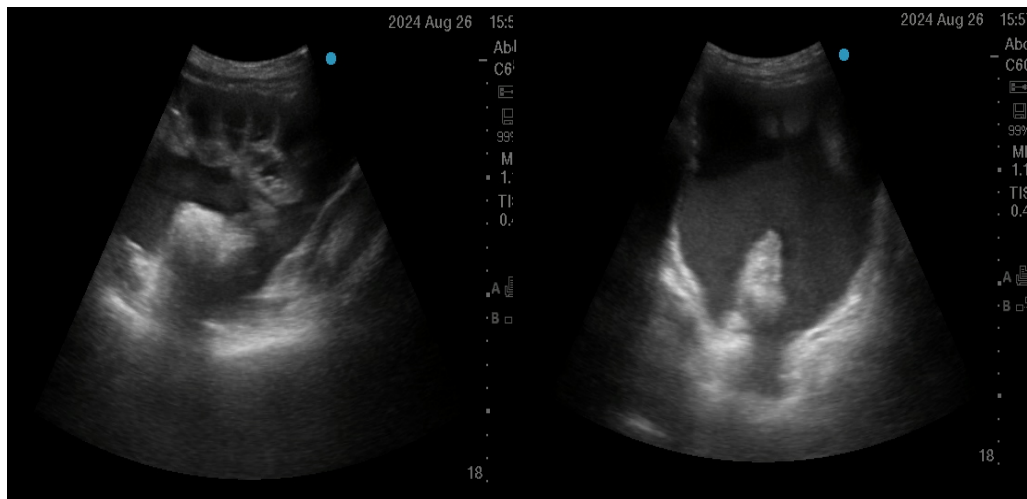
hypovolemic shock, left upper quadrant pain, or signs of peritonitis[3]. Delayed splenic rupture is a rare case following major traumatic events and even rarer following trivial trauma[4]. Here we present 2 cases of hemodynamically stable splenic injury following trivial trauma presented with left shoulder pain. Case 1 presented after 4 days of trivial trauma to abdomen.

### II. CASE 1.

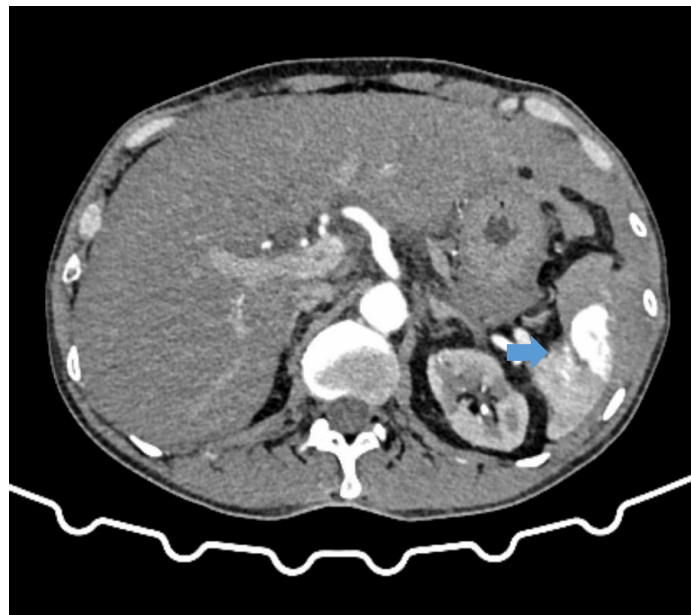
55-year-old male patient shop keeper by occupation, presented to ED with complaints of left shoulder pain for 1 day. He was initially treated in a local hospital near his home for the same complaints. But there was no symptomatic improvement in pain hence he was referred to our hospital. He did not disclose any chest pain, diaphoresis, difficulty in breathing, fever, or pain abdomen. On arrival his vitals were within normal limits (Non-invasive blood pressure of 118/78 mmHg, pulse rate of 82 beats per minute, respiratory rate of 16 per minute, peripheral oxygen saturation of 98% on room air.) On local examination there was no visible contusions or tenderness over the left shoulder, range of motion was full but painful. The abdominal examination showed minimal tenderness in the left hypochondrium with normal bowel sounds. Other systemic examination was unremarkable. He reported an initial Pain score of 6/10 at the left shoulder joint by numerical rating scale and intravenous analgesics was given. Further history revealed that the patient had an accidental slip and fall onto a hard surface while working in his shop with impact on his abdomen 4 days back. Extended Focused assessment with sonography for trauma (E-FAST) scan showed fluid collection in the suprapubic view (Figure 1). Electrocardiogram was normal. In view of positive E-FAST, a contrast enhanced computed tomography scan of abdomen was performed and confirmed that the patient had a Grade V splenic injury with moderate



hemoperitoneum (Figure 2). He was then taken to operating room for emergency splenectomy.



(Figure 1): Free fluid in suprapubic view

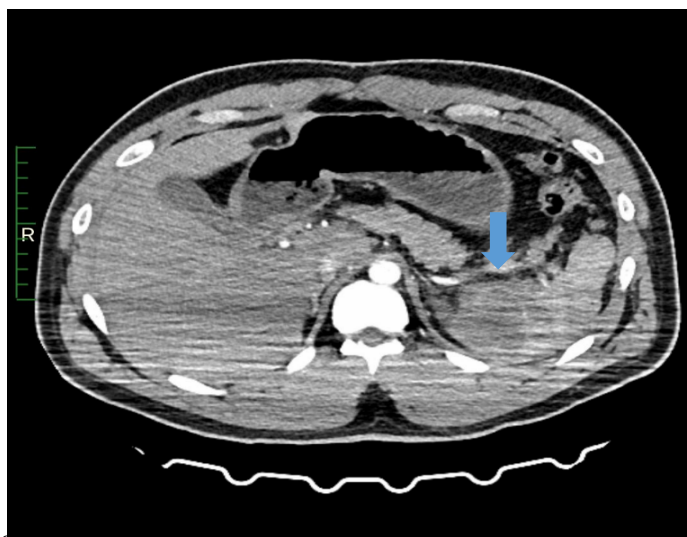


(Figure2): Active contrast extravasation along the anterior splenic parenchyma, large sub capsular hematoma covering >50% of the surface area-AAST grade V splenic injury.

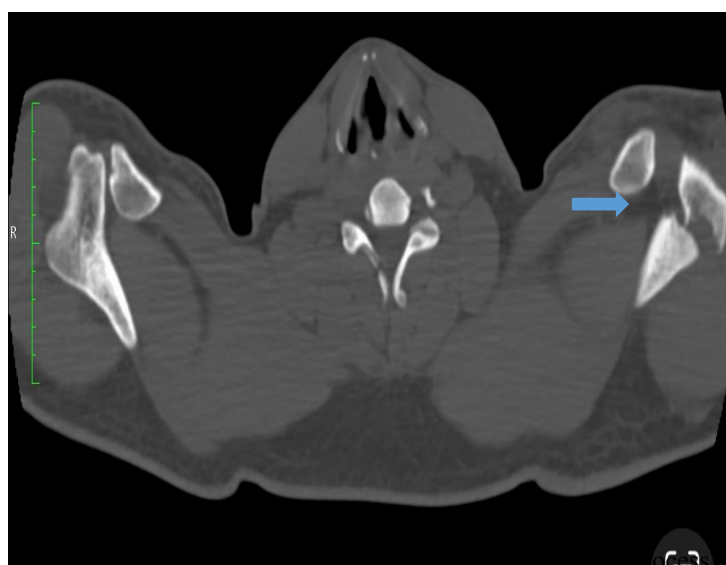
### III.CASE 2.

28-year-old male presented to emergency department with complaints of pain over left shoulder joint following skid and fall from a bicycle 5 hours back. On initial evaluation his vital were within normal limits (respiratory rate of 18 per minute, peripheral oxygen saturation of 100% on room air, Non-invasive blood pressure of 126/81 mmhg, pulse rate of 78 beats per minute). On local examination he had an abrasion over left shoulder joint with mild swelling and tenderness on palpation. His initial pain score was 7/10 which we

have managed with intra-venous analgesics. On Extended Focused assessment with sonography for trauma (E-FAST) scan showed free fluid in Morrison's pouch. Contrast enhanced computed tomography scan of abdomen confirmed that he had a grade III splenic injury with mild hemoperitoneum (Figure 3). X-ray left shoulder was suspicious of fracture of left acromion process, and confirmed that with a plane CT chest with shoulder joint (Figure 4). Since the patient's hemodynamics were stable non-operative management was chosen.



(Figure3): Intraparenchymal hematoma and lacerations involving interpolar region and lower pole of spleen without obvious active bleed—AAST grade III splenic injury.



#### IV. CLINICAL DISCUSSION

Among blunt abdominal trauma spleen is the most commonly injured organ. Injury to the spleen may be suspected on the basis of the patient's mechanism of injury and physical examination findings, but definitive diagnosis generally requires further diagnostic testing. A reliable and quick bedside diagnostic test which we can use in emergency is the E-FAST examination. Abdominal CECT is the gold standard to determine the grades of injury in hemodynamically stable patients. An intraparenchymal or subcapsular hematoma is also easier to identify and sometimes associated with delayed splenic rupture[5]. American Association for the Surgery of Trauma

(AAST) splenic injury scale, is the most widely used grading system for splenic injury [6]. CT imaging combined with the development of interventional radiology and catheter-based vascular management, helps to the non-operative management of splenic injuries. A positive FAST scan is an absolute indication for emergency exploratory laparotomy for hemodynamically unstable patients. However, a negative FAST scan cannot reliably exclude intraabdominal haemorrhage [7].

Through this case report, we want to emphasize that clinicians should keep an eye on the risk of Delayed Splenic Rupture even after trivial trauma. In the first case, the patient



presented with a delay of 4 days and he had a grade V splenic injury. Failure to elicit a trauma history or neglecting the trauma as trivial could have led to the management of shoulder pain and a fatal missed diagnosis of a grade V splenic injury.

Isolated left shoulder pain following a motor vehicle crash may indicate spleen rupture, especially in the absence of visible trauma to the left clavicle or shoulder. In the second case, the only concern of the patient was his left shoulder pain, and a fracture was clinically suspected. However performing an E-FAST examination was key in such patient. Hence, a detailed history of major or minor trauma in the preceding weeks must be elicited for any patients presenting with abdominal pain.

### V.CONCLUSION

Even after trivial trauma, patients can present with splenic injury which can be immediate or delayed. Emergency physician should consider the entire clinical scenario for evaluation of the patient. In any patients presenting with isolated left shoulder pain in the background of minor or major trauma in the preceding weeks, keep a high suspicion on spleen injury.

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