Delayed Splenic Rupture Following Blunt Trauma

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Abstract

There are approximately 40,000 adults in the US who sustain splenic injury annually (1). Solid organ injury may be managed both operatively and nonoperatively. It is recognized the likelihood of failure with nonoperative trauma correlates with the severity of the grade of injury. Splenectomy following 24 hours of nonoperative management is rare (2). We present the case of a 40-year-old patient with delayed presentation of splenic injury following blunt trauma and subsequent delayed splenectomy after failure of nonoperative management.

Key Words: delayed splenic rupture, nonoperative management, splenic laceration

Introduction

Splenectomy following nonoperative management is rare. In hemodynamically stable patients nonoperative management is the standard (3). One study found a 0.27% rate of readmission for delayed splenectomy following initial nonoperative management (2). In this case a 40-year-old male sustained a Grade II splenic injury following blunt trauma. The patient presented several days following his initial injury. He then left the hospital against medical advice and was re-admitted several days later with worsening of his splenic injury. At time of his readmission patient was taken for splenectomy, having failed nonoperative management.

Case Report

40-year-old male presented with LUQ abdominal pain and shortness of breath four days following an altercation. As pain did not improve, he sought medical attention. At time of his presentation he was noted to have left ninth and tenth rib fractures, as well as a grade II splenic injury as shown on CT scan (figure 1. A,B). The patient was admitted to the ICU and placed on bedrest. Plan was made to follow course of nonoperative management. On hospital day two the patient left against medical advice.

Seven days later the patient returned to the hospital with worsening LUQ, left flank pain and shortness of breath. Repeat CT scan showed an enlarging grade III splenic injury (figure 1. C,D). The patient denied any additional trauma during his interval away from medical care. His hemoglobin and hematocrit had trended down to 8.9 and 26.1 respectively from 9.8 and 28.3 at time of his initial presentation. Once again patient was admitted to the ICU, initially with plan for nonoperative management as no active extravasation of IV contrast was seen on repeat CT scan .

After discussion with the patient, in which risks and benefits of nonoperative, IR embolization vs operative management were discussed. Risk of post splenectomy overwhelming sepsis was discussed with the patient. Need for post operative vaccinations was discussed as well. The patient chose to undergo splenectomy. The patient was taken to the operating room and underwent laparotomy with splenectomy (figure 1.E). The patient tolerated the procedure well and post operatively was returned to his room in the ICU.

The post operative course was uncomplicated. Post operatively patient was evaluated by infectious disease. He received vaccination against encapsulated organisms including, Pneumovax 13, hibTITER and Menactra A,C,Y,W-135.

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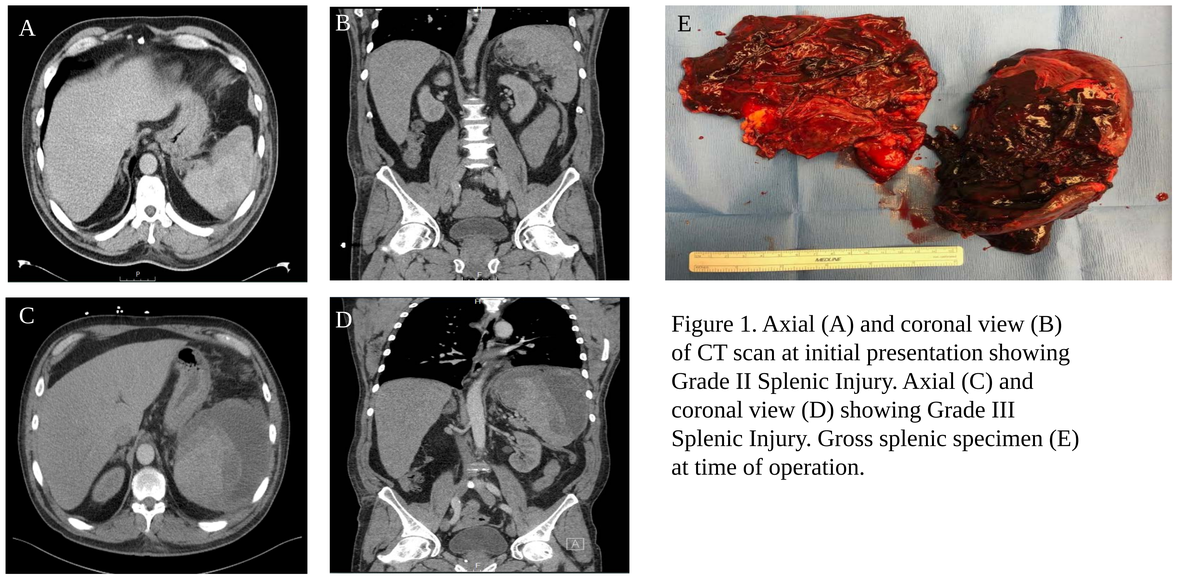

Figure 1. Axial (A) and coronal view (B) of CT scan at initial presentation showing Grade II Splenic Injury. Axial (C) and coronal view (D) showing Grade III Splenic Injury. Gross splenic specimen (E) at time of operation.

Discussion

The American Association for the Surgery of Trauma (AAST) has developed a grading system for organ injuries to guide operative vs nonoperative management. Grade I and II injuries are low grade, and typically resolve well without surgical intervention. Increasing grade of severity of injury is correlated with higher likelihood of failure of nonoperative management (4). In one multicenter study grade II injury was found to correlate with a 9.5% failure of nonoperative management and grade III injury with 19.% failure (4). In another study there was a 0.27% readmission rate for delayed splenectomy after admission for nonoperative management (2). Most patients who fail nonoperative management will do so in the first 72 hours following hospitalization (1).

Our patient presented for initial evaluation four days after his inciting blunt trauma. In a patient with a Grade II splenic injury without active blush on CT, standard therapy would recommend bed rest, observation and serial abdominal exams (5). Our patient left AMA and returned several days later with worsening of his splenic injury. Per the patient he sustained no additional traumas. As the patient failed nonoperative management, he was taken for splenectomy. This patient represents a small minority of patients who fail nonoperative management, as he failed 13 days after his initial injury. One study looking at outpatient follow up for nonoperative splenic injuries found 10% of injuries worsened (6). Additionally, of the 637 patients in the study one patient with Grade II splenic injury required splenectomy after outpatient follow up imaging demonstrated worsening splenic injury (6).

Most patients with low grade (I-II) splenic injury following blunt trauma can be managed nonoperatively. However, these patients require close follow up, as injury severity may worsen and may require operative intervention.

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