

Figure 12-1. Bedside ultrasound demonstrates free fluid within the abdomen adjacent to the kidney and liver.



Figure 12-2. CT scan of the abdomen demonstrates splenic injury.

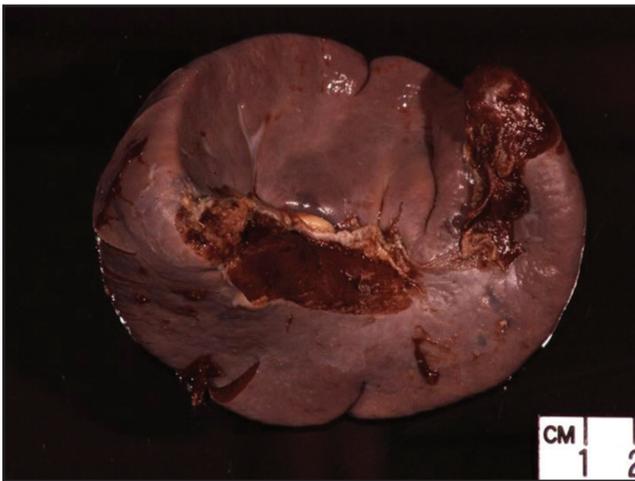


Figure 12-3. Gross pathology demonstrates splenic laceration post-splenectomy.

appropriate setting. Athletes should refrain from eating or drinking prior to medical evaluation, and medical professionals should withhold pain medications to allow for a reliable physical examination.

Survival is improved when injured patients receive care at a designated trauma center—whether adult, pediatric, or combined—as compared to a non-trauma center. Further, pediatric patients have increased survival when cared for at designated pediatric trauma centers.¹⁻³ Although most patients without serious injury can be evaluated and cared for in their local medical centers, they may be stabilized and transferred to a specialized center if they have significant injury mechanism, significant injury burden (eg, multiple long-bone fractures, polytrauma, amputation, spinal cord injury, spine fracture, severe head, polytrauma), or if they require specialist services at a tertiary care center.⁴

Solid-Organ Injury

Evaluation

Solid-organ injury is common in athletes after significant blunt abdominal trauma. The spleen is the most commonly injured solid organ (25% to 39%), followed by the liver (15% to 37%), kidney (19% to 25%), and pancreas (7%).⁵ While splenic injury is more common than hepatic injury, damage to the liver is responsible for most fatal solid-organ injuries and can result in significant hemorrhage and massive blood loss. Solid-organ injury should be suspected based on physical examination findings and injury mechanism. Injury mechanism, such as abrupt deceleration, impact from the handlebar of a bicycle or all-terrain vehicle, or trauma from a direct blow to the abdomen, should raise suspicion for intra-abdominal injury.

Determining which patients need a CT scan is an area of active research interest, particularly in adolescents and young adults. The desire to limit radiation burden should be weighed against the risk of missing significant intra-abdominal injury. Patients with evidence of abdominal wall or torso trauma on physical examination, with complaints of abdominal pain or presence of abdominal tenderness, vomiting, abnormal laboratory studies (eg, alanine aminotransferase and aspartate aminotransferase >200/125, elevated amylase/lipase, 100 renal plasma clearance on urinalysis), gross hematuria, or a positive bedside ultrasound should undergo additional imaging with contrasted CT scan if hemodynamically stable versus fluid resuscitation and/or operative intervention if hemodynamically unstable. Patients without these signs and symptoms are at low risk for intra-abdominal injury and can likely be observed without additional imaging or intervention.⁶